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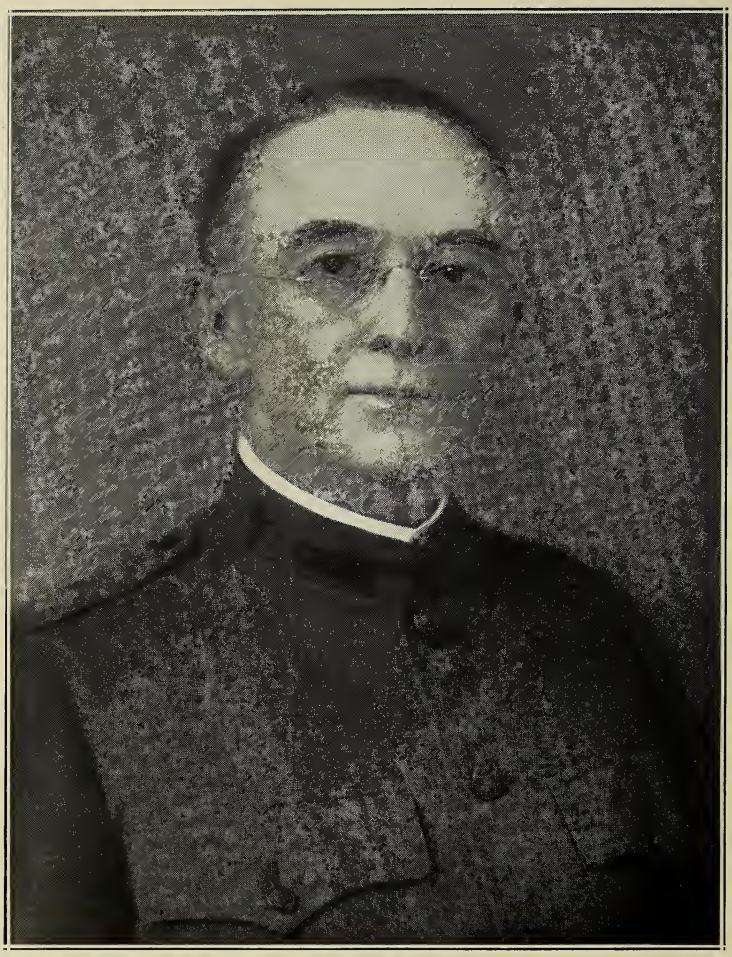

John Wesley Long

TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

State of North Carolina

SEVENTIETH
ANNUAL SESSION

HELD AT

ASHEVILLE, NORTH CAROLINA
APRIL 17, 18, 19, 1923

PRESIDENT

J. W. LONG, M.D., F. A. C. S., GREENSBORO

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L. B. McBRAYER, M.D., F. A. C. P., SANATORIUM

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"It is understood that the Society is not to be considered as endorsing all the views and opinions of authors of papers in the Transactions of the Society."—*Extract from By-Laws, Chapter 10, Section 8.*

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ROSTER OF OFFICERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1923

*Missing Data Not to Be Found in Record

	Date	Place	Members in Attendance	Presidents	Vice-Presidents	Secretary	Treasurer	Members on Roll*	Honorary Members*	Honorary Fellows*
	1849	Raleigh	25	F. J. Hill	----------	W. H. McKee	----------	25	----	----
1	1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. W. Williamson, W. G. Thomas.	W. H. McKee	W. G. Hill	38	9	----
2	1851	Raleigh	23	E. Strudwick	C. E. Johnson.	W. H. McKee	W. G. Hill	46	9	----
3	1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman.	E. B. Haywood	J. J. W. Tucker	72	12	----
4	1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston P. Jones, J. B. G. Myers, N. J. Pittman.	W. W. Harris	Daniel Dupree	80	14	----
5	1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean.	S. S. Satchwell	Daniel Dupree	84	17	----
6	1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly.	S. S. Satchwell	J. B. Dunn	96	18	----
7	1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson.	S. S. Satchwell	J. B. Dunn	101	22	----
8	1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson.	W. G. Thomas	J. B. Dunn	113	16	----
9	1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce.	W. G. Thomas	J. B. Dunn	172	18	----
10	1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard.	W. G. Thomas	C. W. Graham	-----	----	----
11	1860	Washington	64	N. J. Pittmon	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach.	W. G. Thomas	C. W. Graham	233	18	----
12	1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom.	W. G. Thomas	C. W. Graham	244	18	----
13	1866	Raleigh	20	J. J. Summerell	----------	W. G. Thomas	C. W. Graham	-----	----	----
14	1867	Tarboro	41	W. G. Thomas	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones.	S. S. Satchwell	C. W. Graham	288	11	----
15	1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker.	Thomas F. Wood	J. W. Jones	-----	----	----
16	1869	Salisbury	36	E. B. Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A. Locke.	Thomas F. Wood	J. W. Jones	-----	----	----
17	1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Lucky, W. R. Sharpe, R. L. Payne.	Thomas F. Wood	J. W. Jones	-----	----	----
18	1871	Raleigh	35	Hugh Kelly	D. N. Patterson, R. C. Pearson, J. B. Seaby, G. L. Kirby.	Thomas F. Wood	J. W. Jones	-----	----	----
19	1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom.	James McKee	J. W. Jones	-----	----	----
20	1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, T. P. Jerman.	James McKee	H. T. Bahnson	-----	----	----

ROSTER OF OFFICERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1923—Continued.
*Missing Data Not to Be Found in Record

	Date	Place	Members in Attendance	Presidents	Vice-Presidents	Secretary	Treasurer	Members on Roll*	Honorary Members*	Honorary Fellows*
21	1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight.	James McKee	H. T. Bahnson	-----	----	----
22	1875	Wilson	60	J. W. Jones	Walter Debnam, J. A. Gibson, William Little, D. N. Patterson.	James McKee	H. T. Bahnson	148	5	----
23	1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Haigh, J. K. Hall.	James McKee	H. T. Bahnson	157	4	----
24	1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill.	James McKee	A. G. Carr	177	4	----
25	1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Smith.	L. J. Picot	A. G. Carr	194	6	----
26	1879	Greensboro	109	Chas. Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill.	L. J. Picot	A. G. Carr	198	6	----
27	1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis.	L. J. Picot	A. G. Carr	225	6	----
28	1881	Asheville	92	R. B. Haywood	J. E. McRee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy.	L. J. Picot	A. G. Carr	254	6	----
29	1882	Concord	65	Thos. F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald.	L. J. Picot	A. G. Carr	297	7	----
30	1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead.	L. J. Picot	A. G. Carr	310	7	----
31	1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long.	L. J. Picot	A. G. Carr	348	7	----
32	1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr.	W. C. Murphy	R. L. Payne, Jr.	424	6	----
33	1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison.	J. M. Baker	R. L. Payne, Jr.	438	7	----
34	1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Van Poole, H. B. Ferguson.	J. M. Baker	R. L. Payne, Jr.	452	7	----
35	1888	Fayetteville	133	T. D. Haigh	W. T. Ennett, J. A. Dunn, T. E. Anderson.	J. M. Baker	C. M. Van Poole	306	6	----
36	1889	Elizabeth C.	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long.	J. M. Baker	C. M. Van Poole	410	6	----
37	1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth.	J. M. Hays	C. M. Van Poole	414	6	----
38	1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly.	J. M. Hays	C. M. Van Poole	422	6	----
39	1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard.	J. M. Hays	C. M. Van Poole	431	6	----
40	1893	Raleigh	221	J. W. McNeill	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill.	R. D. Jewett	M. P. Perry	447	5	3
41	1894	Greensboro	166	W. H. H. Cobb	J. A. Hodge, R. W. Tate, Willis Alston, M. H. Fletcher.	R. D. Jewett	M. P. Perry	454	5	3

42	1895	Goldsboro	---	J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer.	R. D. Jewett	M. P. Perry	436	7	3
43	1896	Winston-Salem	158	R. L. Payne	S. B. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley.	R. D. Jewett	M. P. Perry	452	7	3
44	1897	Morehead City	103	P. L. Murphy	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long.	R. D. Jewett	M. P. Perry	406	6	3
45	1898	Charlotte	---	Francis Duffy	E. C. Register, A. T. Cotton, J. B. H. Knight, F. H. Russell.	R. D. Jewett	M. P. Perry	437	6	21
46	1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson.	Geo. W. Pressley	G. T. Sikes	489	6	16
47	1900	Tarboro	115	George W. Long	C. M. Van Poole, James M. Parrott, T. B. Williams, W. D. Hilliard.	Geo. W. Pressley	G. T. Sikes	482	6	21
48	1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell.	Geo. W. Pressley	G. T. Sikes	515	5	18
49	1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott.	Geo. W. Pressley	G. T. Sikes	546	5	20
50	1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson.	J. Howell Way	G. T. Sikes	530	6	19
51	1904	Raleigh	326	H. B. Weaver	John Hey Williams, John C. Rodman, S. F. Pfohl.	J. Howell Way	G. T. Sikes	1033	8	17
52	1905	Greensboro	361	David T. Tayloe	C. A. Julian, John T. Burrus, I. W. Faison.	J. Howell Way	G. T. Sikes	1175	8	17
53	1906	Charlotte	406	Ed. C. Register	L. B. McBrayer, W. H. Cobb, W. O. Spencer.	J. Howell Way	G. T. Sikes	1234	8	16
54	1907	Morehead City	217	Samuel D. Booth	C. M. Strong, J. E. McLoughlin, W. F. Hargrove.	David A. Stanton	H. McK. Tucker	888	8	16
55	1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon.	David A. Stanton	H. McK. Tucker	998	7	28
56	1909	Asheville	337	J. F. Highsmith	C. M. Van Poole, D. A. Garrison, D. O. Dees.	David A. Stanton	H. McK. Tucker	1067	7	25
57	1910	Wrightsville Beach		*J. A. Burroughs	E. J. Wood, John Q. Myers, L. D. Wharton.	David A. Stanton	H. D. Walker	1080	8	35
			276	E. J. Wood	J. V. McGoughan, W. E. Warren, L. N. Glenn.	David A. Stanton	H. D. Walker	880	8	45
58	1911	Charlotte	412	C. M. VanPoole	J. P. Munroe, W. P. Horton, J. G. Murphy.	David A. Stanton	H. D. Walker	950	8	44
59	1912	Hendersonville	296	A. A. Kent	F. R. Harris, E. S. Bulluck, L. B. Morse.	John A. Ferrel	H. D. Walker	1128	8	47
60	1913	Morehead City	232	J. P. Munroe	E. T. Dickinson, J. T. J. Battle, D. E. Sevier.	John A. Ferrel	H. D. Walker	1228	8	47
61	1914	Raleigh	431	J. M. Parrott	J. J. Phillips, C. W. Moseley, S. M. Crowell.	John A. Ferrel	H. D. Walker	1221	9	68
62	1915	Greensboro	443	L. B. McBrayer	J. L. Nicholson, L. N. Glenn, W. H. Hardison.	Benj. K. Hays	W. M. Jones	1228	10	79
63	1916	Durham	406	M. H. Fletcher	D. J. Hill, J. L. Spruill, J. H. Shuford.	Benj. K. Hays	W. M. Jones	1271	11	81
64	1917	Asheville	280	Charles O'H. Laughinghouse	Wm. deB. MacNider, Jos. B. Greene, Ben F. Royal.	Benj. K. Hays	W. M. Jones	1087	11	81
						Secy-Treas.	Acting			
65	1918	Pinehurst	192	I. W. Faison	J. W. Halford, T. W. Davis, A. McN. Blair.	Benj. K. Hays	L. B. McBrayer	1306	11	100
66	1919	Pinehurst	335	Cyrus Thompson	H. D. Walker, F. Stanley Whitaker, Thos. I. Fox.	Benj. K. Hays	L. B. McBrayer	1497	12	100
67	1920	Charlotte	479	C. V. Reynolds	C. S. Lawrance, W. H. Ward, J. M. Manning.	Benj. K. Hays	L. B. McBrayer	1491	12	93
68	1921	Pinehurst	404	T. E. Anderson	W. T. Parrot, B. C. Nalle, J. R. McCracken.	Secretary-Treasurer L. B. McBrayer		1571	12	100
69	1922	Winston-Salem	507	H. A. Royster	F. M. Hanes, T. C. Johnson, B. L. Long.	L. B. McBrayer		1591	9	101
70	1923	Asheville	356	J. W. Long						

*Died during his term of office, succeeded by E. J. Wood, first vice-president.

EARLY HISTORY OF THE NORTH CAROLINA MEDICAL SOCIETY FROM ORGANIZATION TO 1804

Date	Place	President	Vice-President	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 24, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis John Claiborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton James Webb Jas. John Pasteur Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterlin Wheaton			
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchel Richard Fenner	Calvin Jones	Sterlin Wheaton		Cargill Massenburg	James Webb John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

PAST MEMBERS BOARD OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

Charles H. Dickson, President, Wilmington 1859-1866
Charles E. Johnson, Raleigh 1859-1866
Caleb Winslow, Hertford 1859-1866
Otis F. Manson, Townsville 1859-1866
William H. McKee, Raleigh 1859-1866
Christopher Happoldt, Morganton 1859-1866
J. Graham Tull, New Bern 1859-1866
Samuel T. Iredell, Secretary 1859-1866

N. J. Pittman, President, Tarboro 1866-1872
E. Burke Haywood, Raleigh 1866-1872
R. H. Winborne, Edenton 1866-1872
S. S. Satchwell, Rocky Point 1866-1872
J. J. Summerell, Salisbury 1866-1872
R. B. Haywood, Raleigh 1866-1872
M. Whitehead, Salisbury 1866-1872
J. E. Shaffner, Salem 1866-1872
William Little, Secretary 1866-1872

Charles J. O'Hagan, President, Greenville 1872-1878
W. A. B. Norcom, Edenton 1872-1878
C. Tate, Murphy 1872-1878
George A. Foote, Warrenton 1872-1878
J. W. Jones, Tarboro 1872-1878
R. L. Payne, Lexington 1872-1878
Charles Duffy, Jr., Secretary, New Bern 1872-1878

P. E. Hines, President, Raleigh 1878-1884
T. D. Haigh, Fayetteville 1878-1884
George L. Kirby, Goldsboro 1878-1884
Thomas F. Wood, Wilmington 1878-1884
Joseph Graham, Charlotte 1878-1884
H. B. Bahnson, Secretary, Salem 1878-1884
R. H. Lewis, Raleigh 1880-1884

William R. Wood, President, Scotland Neck 1884-1890
A. W. Knox, Raleigh 1884-1890
Francis Duffy, New Bern 1884-1890
P. L. Murphy, Morganton 1884-1890
Willis Alston, Littleton 1884-1890
W. H. J. Bellamy, Secretary, Wilmington 1884-1890
J. A. Reagan, Weaverville 1884-1890
R. L. Payne, Norfolk, Va. 1890-1892
George W. Purefoy, Asheville 1890-1892
George G. Thomas, Wilmington 1890-1894

Robert S. Young, Concord 1890-1894
George W. Long, Graham 1890-1894

W. H. Whitehead, President, Rocky Mount 1890-1896
L. J. Picot, Secretary, Littleton 1890-1896

Julian M. Baker, President, Tarboro 1892-1898
H. B. Weaver, Asheville 1892-1898
T. S. Burbank, Wilmington 1894-1898
J. M. Hayes, Greensboro 1894-1897
D. T. Tayloe, President, Wilmington 1896-1902
R. H. Whitehead, Chapel Hill 1896-1897
Thomas E. Anderson, Secretary, Statesville 1896-1900
Kemp P. Battle, Jr., Raleigh 1897-1902
J. Howell Way, Secretary, Waynesville 1897-1902
W. H. H. Cobb, Goldsboro 1898-1902
Albert Anderson, Raleigh 1898-1902

E. C. Register, President, Charlotte 1898-1902
Thomas S. McMullan, Hertford 1900-1902
John C. Walton, Richmond, Va. 1900-1902
George W. Pressley, Secretary, Charlotte 1902-1906

A. A. Kent, President, Lenoir 1902-1908
G. T. Sikes, Secretary, Grissom 1906-1908
Charles O'Hagan Laughinghouse, President, Greenville 1902-1908
M. H. Fletcher, President, Asheville 1902-1908
James M. Parrott, Kinston 1902-1908
J. T. J. Battle, Greensboro 1902-1908
Frank H. Russell, Wilmington 1902-1908

John Bynum, President, Winston-Salem 1908-1914
John C. Rodman, Washington 1908-1914
Benjamin K. Hays, Secretary, Oxford 1908-1914
L. B. McBrayer, Asheville 1908-1914
William W. McKenzie, Salisbury 1908-1914
Henry H. Dodson, Greensboro 1908-1914
J. L. Nicholson, Richlands 1908-1914

J. Q. Myers, President, Charlotte 1914-1920
J. F. Highsmith, Fayetteville 1914-1920
H. A. Royster, Secretary, Raleigh 1914-1920
E. G. Moore, Elm City 1914-1920
J. G. Blount, Washington 1914-1920
M. L. Stevens, Asheville 1914-1920
*Charles T. Harper, Wilmington 1914-1915

BOARD OF MEDICAL EXAMINERS, 1920-1926

L. N. Glenn, President, Gastonia, Surgery.
J. Gerald Murphy, Wilmington, Pharmacology, Materia Medica and Therapeutics.
L. A. Crowell, Lincolnton, Anatomy and Embryology.
K. P. B. Bonner, Secretary, Raleigh, Obstetrics, Gynecology, and Pedriatrics.
W. P. Holt, Duke, Practice of Medicine.
W. M. Jones, Greensboro, Chemistry, Physiology and Hygiene.
C. A. Shore, Raleigh, Pathology, Bacteriology, Histology.

*Deceased 1915.

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH FROM ORGANIZATION IN 1877 TO 1923

Name	Address	Apointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledeux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
J. M. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1883 to 1886
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1893
Thomas F. Wood, Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1893
H. T. Bahnson, M.D., President	Winston-Salem	State Society	1887 to 1888
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1889
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1893
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1892
J. M. Baker, M.D.	Tarboro	State Society	1889 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1891 to 1892
Thomas F. Wood, M.D., Secretary*	Wilmington	State Society	1891 to 1897
George G. Thomas, M.D., President	Wilmington	State Board of Health	1892 to 1897
S. Westray Battle, M.D.	Asheville	State Society	1891 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1892 to 1895
John Whitehead, M.D.	Salisbury	State Board of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Milmington	Gov. Elias Carr	1893 to 1895
R. H. Lewis, Secretary	Raleigh	Gov. Elias Carr	1893 to 1895
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1894 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1895 to 1897
John C. Chase, Civil Eigineer	Wilmington	Gov. Elias Carr	1897 to 1899
Charles J. O'Hagan, M.D.	Raleigh	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1897 to 1899
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1897 to 1899
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901

*Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

ROSTER OF MEMBERS—Continued

Name	Address	Appointed by	Term
H. H. Dodson, M.D.	Milton	State Society	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycock	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycock	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycock	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycock	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Mhitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George E. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1907 to 1913
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1913
David T. Tayloe, M.D.	Washington	State Society	1907 to 1909
James A. Burroughs, M.D.*	Asheville	State Society	1907 to 1913
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1909 to 1913
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1911 to 1917
R. H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1919
A. A. Kent, M.D.¶	Lenoir	State Society	1913 to 1915
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1913 to 1919
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1915 to 1921
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1923
E. C. Register, M.D.*	Charlotte	Gov. T. W. Bickett	1917 to 1923
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1917 to 1923
Fletcher R. Harris, M.D.**	Henderson	State Society	1919 to 1923
A. J. Crowell, M.D.	Charlotte	Gov. T. W. Bickett	1919 to 1923
Chas. E. Waddell, C.E.***	Asheville	Gov. Cameron Morrison	1921 to 1923
Cyrus Thompson, M.D.	Jacksonville	State Society	1919 to 1925
R. H. Lewis, M.D.	Raleigh	Gov. T. W. Bickett	1919 to 1925
E. J. Tucker, D.D.S.	Roxboro	Gov. T. W. Bickett	1919 to 1925
Chas. E. Waddell, C.E.	Asheville	Gov. Cameron Morrison	1921 to 1923
J. Howell Way, M.D.	Waynesville	Gov. Cameron Morrison	1923 to 1929
A. J. Crowell, M.D.	Charlotte	Gov. Cameron Morrison	1923 to 1929
James P. Stowe	Charlotte	Gov. Cameron Morrison	1923 to 1927
D. A. Stanton, M.D.	High Point	State Board of Health	1923 to 1925
Thomas E. Anderson, M.D.	Statesvile	State Society	1923 to 1929
Charles O'H. Laughinghouse	Greenville	State Society	1923 to 1929

¶Resigned to become member General Assembly.
*Died leaving unexpired term.
**Resigned to become Health Officer Vance County.

***Resigned.

STATE BOARD OF EXAMINERS FOR NURSES

Mrs. Dorothy Hayden, Secretary — Greensboro
Miss E. A. Kelly — Fayetteville
Miss Mary P. Laxton — Biltmore
Dr. Oren Moore — Charlotte
Dr. J. M. Parrott — Kinston

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1909-1923

Counties	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Alamance	15	14	12	11	11	13	9	10	12	10	15	27	27	31	27
Alexander *a*	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Alleghany	----	----	----	----	----	----	2	2	----	----	----	----	----	----	1
Anson	1	1	1	6	8	7	----	----	----	1	3	2	1	2	12
Ashe	----	1	----	----	----	----	----	----	11	15	8	7	5	9	8
Avery	----	----	----	----	----	8	7	9	9	7	6	4	5	4	5
Beauford	11	11	16	15	14	14	14	14	10	11	10	14	12	14	17
Bertie	4	5	2	2	2	3	3	3	3	5	5	10	9	12	10
Bladen	3	3	4	4	5	7	7	6	9	8	9	8	7	7	4
Brunswick	4	2	2	2	5	4	5	----	----	2	2	2	1	1	1
Buncombe	54	58	63	64	69	68	70	71	74	76	81	83	92	96	99
Burke	10	13	12	11	13	15	17	17	16	17	6	11	12	11	15
Cabarrus	16	18	21	21	19	22	23	25	20	22	19	20	19	21	23
Caldwell	12	13	12	10	12	12	11	7	9	13	12	10	10	12	12
Camden *b*	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Carterest	7	7	6	7	6	7	7	9	7	4	7	9	9	8	12
Caswell	2	1	1	1	1	1	1	1	1	1	3	2	2	1	1
Catawba	12	12	----	----	----	----	15	13	18	----	5	18	16	22	20
Chatham	2	2	6	----	14	15	12	11	11	11	7	10	11	6	7
Cherokee	9	6	7	9	8	7	10	9	11	10	6	10	10	10	10
Chowan	----	----	7	5	8	9	7	4	3	----	6	8	7	6	7
Clay *c*	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Cleveland	13	13	14	15	15	16	13	13	16	16	17	19	16	19	18
Columbus	8	8	10	12	12	14	9	11	7	1	6	10	8	9	14
Craven	14	14	12	14	18	15	11	8	11	7	7	6	6	8	10
Cumberland	17	20	20	22	23	22	24	19	17	16	15	20	24	23	22
Currituck	3	6	4	4	4	6	7	6	6	1	5	5	5	5	4
Dare *d*	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Davidson	12	13	13	15	13	17	13	9	20	20	19	18	16	18	18
Davie	6	6	5	6	----	----	----	6	5	4	4	4	4	4	6
Duplin	10	10	9	8	9	7	4	7	10	9	9	10	12	11	12
Durham-Orange	24	26	28	31	32	38	40	41	44	35	33	45	40	43	43
Edgecombe	10	10	11	11	11	13	13	13	10	10	7	15	15	15	12
Forsyth	30	25	29	31	32	37	39	42	45	37	37	57	62	60	59
Franklin	9	11	11	11	10	10	12	11	10	11	11	12	10	12	12
Gaston	25	27	29	29	30	27	26	25	27	27	26	35	38	39	40
Gates	----	----	----	----	----	----	----	----	----	----	1	----	----	----	1
Graham	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Granville	12	12	8	13	12	14	11	16	16	14	14	15	14	14	12
Greene	6	6	6	5	5	5	5	6	5	2	5	6	7	7	5
Guilford	64	65	56	58	59	62	71	66	68	67	72	77	78	80	87
Halifax	7	6	2	2	11	11	7	15	8	1	7	28	24	24	18
Harnett	19	15	14	17	17	16	17	15	17	15	14	16	15	16	15
Haywood	15	13	10	11	13	15	11	11	11	9	9	11	10	12	13
Henderson-Polk	14	14	17	17	11	14	14	15	15	11	13	15	13	13	13
Hertford	8	6	2	----	8	10	4	1	5	10	10	10	10	10	10
Hoke	----	----	----	----	----	----	----	----	10	11	10	10	8	6	8
Hyde	8	6	6	6	7	7	----	----	----	1	2	1	1	2	1
Iredell-Alexander	18	17	12	9	9	14	16	9	20	11	11	21	18	20	19
Jackson	----	----	----	----	2	3	5	2	5	2	5	5	6	6	6
Johnston	13	15	19	18	18	19	21	19	22	16	24	22	23	26	25
Jones	----	----	----	----	----	----	----	----	----	----	----	----	----	1	2
Lee	----	----	----	----	7	8	7	8	8	6	8	8	8	10	10
Lenoir	9	12	6	8	9	12	14	15	16	15	17	22	19	20	17
Lincoln	10	10	10	11	12	13	14	11	9	11	15	16	14	13	14
Macon-Clay	5	----	----	----	4	4	5	5	4	6	6	6	7	7	7
Madison	12	----	----	10	7	8	11	9	10	----	11	11	12	8	11
Martin	13	13	13	12	13	14	14	15	17	12	11	16	14	12	13
McDowell	8	4	5	6	6	7	7	7	8	7	6	6	5	5	6
Mecklenburg	51	57	44	50	63	69	71	74	63	49	97	104	107	110	115
Mitchell	7	4	5	5	4	2	2	2	1	----	4	5	8	10	10
Montgomery	7	9	7	7	8	6	10	9	9	8	6	8	11	10	9
Moore	10	11	21	21	13	16	15	18	10	15	16	16	17	21	20
Nash	----	----	----	1	----	19	18	26	27	21	26	25	26	30	30
New Hanover	23	21	21	22	31	28	33	41	30	29	38	40	46	51	46
Northampton	8	11	9	1	12	12	11	10	14	11	13	10	11	11	10
Onslow	4	6	11	10	12	10	8	9	11	7	9	8	7	7	5
Orange *e*	1	1	1	1	8	----	----	----	----	----	----	----	6	----	----
Pamlico	5	4	4	4	5	5	5	5	5	4	4	5	6	5	5
Pasquotank-Camden-Dare	10	11	12	12	13	15	15	17	19	16	15	16	11	19	18
Pender	----	2	2	2	2	----	----	----	----	4	3	1	1	2	2
Perquimans	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Person	9	9	10	11	11	8	11	13	12	----	12	10	11	10	10
Pitt	14	10	10	5	9	5	15	9	14	5	18	24	19	24	23
Polk *f*	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Randolph	9	10	8	9	7	12	14	11	13	11	12	13	15	14	14

STATUS OF MEMBERSHIP BY COUNTIES—(Continued)

Counties	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Richmond	1	12	1	10	----	10	13	13	14	11	13	12	14	13	14
Robeson	20	15	22	23	35	24	16	22	16	8	31	35	34	33	27
Rockingham	1	16	16	16	18	19	17	10	4	15	16	20	23	25	21
Rowan	23	24	26	24	23	26	22	25	23	22	24	28	31	32	32
Rutherford	22	23	24	18	19	20	19	21	14	17	18	20	12	18	22
Sampson	10	11	11	12	12	14	14	18	15	10	11	13	14	12	13
Scotland	10	11	9	9	11	12	12	12	13	10	9	10	12	12	12
Stanly	8	11	10	11	11	13	14	9	14	11	11	15	12	11	12
Stokes	11	9	10	11	7	12	13	12	10	5	5	10	6	12	9
Surry	15	15	13	14	19	21	19	18	23	24	27	28	25	25	24
Swain	8	----	----	----	----	----	----	----	6	7	2	3	1	4	3
Transylvania	1	----	5	5	6	7	6	7	5	----	1	1	1	5	6
Tyrrell *g*	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Union	14	14	15	16	17	16	16	12	13	15	14	16	17	17	18
Vance	9	12	11	11	11	10	11	13	10	4	5	11	11	10	10
Wake	49	53	56	54	41	53	57	62	70	56	81	68	73	76	85
Warren	----	----	4	5	5	5	8	7	7	6	3	8	8	7	7
Washington-Tyrrell	----	----	----	----	----	----	----	----	----	----	----	----	10	9	9
Watauga	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Wayne	10	----	----	16	19	13	7	17	19	18	27	28	24	33	32
Wilkes	8	11	11	6	9	8	7	6	9	8	10	10	11	10	10
Wilson	16	17	17	17	17	24	22	22	24	21	25	29	31	28	31
Yadkin	8	6	6	6	7	7	6	----	----	----	10	2	5	4	3
Yancey	3	----	----	----	----	----	----	----	----	----	3	3	1	1	1
Totals	1012	997	996	1036	1133	1220	1221	1228	1271	1087	1306	1497	1491	1571	1592

a See Iredell-Alexander; b See Pasquotank-Camden-Dare; c See Macon-Clay; d See Pas-Quotank-Camden-Dare; e See Durham-Orange; f See Henderson-Polk; g See Washington-Tyrrell.

HONORARY FELLOWS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Adams, M. R._____Statesville
Alexander, Annie L._____Charlotte
*Alston, B. P._____Epsom
Ambler, C. P._____Asheville
Anderson, Albert_____Raleigh
Anderson, Thos. Eli_____Statesville
*Archey, L. M._____Concord
*Asbury, F. E._____Ashboro
Attamore, Geo. S._____Stonewall
*Bahnson, H. T._____Winston-Salem
Baker, J. M._____Tarboro
*Barrier, P. A._____Mt. Pleasant
Battle, J. T. J._____Greensboro
*Battle, Kemp P._____Raleigh
Battle, S. W._____Asheville
Beall, Wm. P._____Greensboro
*Bellamy, W. J. H._____Wilmington
Boddie, N. P._____Durham
*Bolton, Mahlon_____Rich Square
*Booth, Samuel D._____Oxford
*Bulluck, D. Wm._____Wilmington
Bynum, John_____Winston-Salem
Caldwell, D. G._____Concord
*Cheatham, Archibald_____Durham
*Clark, G. L._____Clarkton
Council, J. B._____Salisbury
*Covington, J. M._____Wadesboro
Cox, E. L._____Jacksonville
*Croom, J. D._____Maxton
Daligny, Charles_____Troy
Dalton, David N._____Winston-Salem
De Armon, J. McC._____Charlotte
*Denny, Wm. W._____Pink Hill
Dillard, Richard, Jr._____Edenton
Dodson, H. H._____Greensboro
*Duffy, Charles_____New Bern
*Duffy, Francis_____New Bern
Edgerton, Jas. L._____Hendersonville
Edwards, G. C._____Hookerton
Ellis, R. C._____Shelby
Faison, I. W._____Charlotte
Faison, Wm. W._____Goldsboro
Fletcher, M. H._____Asheville
Fox, M. F._____Guilford College
Freeman, Richard A._____Burlington
Galloway, W. C._____Wilmington
Gibbon, Robert L._____Charlotte
Goley, Wm. R._____Graham
*Goodman, E. G._____Lanvale
Goodwin, A. W._____Raleigh
*Graham, Joseph_____Charlotte
Graham, Wm. A._____Charlotte
Griffin, J. A._____Clayton
*Hall, Wright_____Wilmington
Hargrove, R. H._____Robersonville
Harris, F. R._____Henderson
*Harris, I. A._____Weaverville
Haywood, F. J._____Raleigh
Haywood, Hubert_____Raleigh
Hicks, Wm. N._____Durham
Highsmith, J. F._____Fayetteville
*Hill, L. H._____Germanton
*Hudson, Wm. L._____Dunn
Hughes, Francis W._____New Bern
Hunter, L. W._____Charlotte
Irwin, J. R._____Charlotte
Jewett, Robert D._____Wilmington
Johnson, N. M._____Durham
Jones, A. G._____Walnut Cove
Jordan, T. M._____Raleigh
Julian, Charles A._____Thomasville
Knight, J. B. H._____Williamston
Knox, A. W._____Raleigh
Leggett, Kenelm_____Hobgood
Lewis, H. W._____Jackson
Lewis, R. H._____Raleigh
Long, Benj. L._____Hamilton
*Long, Geo. W._____Graham
Long, H. F._____Statesville
Long, J. W._____Greensboro
Love, W. J._____Wilmington
McDonald, A. D._____Wilmington
McGee, J. W._____Raleigh
*McKay, A. M._____Summerville
*McKay, John A._____Buies Creek
*McKee, James_____Raleigh
McMillan, Benj. F._____Red Springs
*McMillan, J. D._____Edenton
*McMillan, J. L._____Red Springs
McMillan, W. D._____Wilmington
McNeill, J. Wm._____Fayetteville
*McNeill, Wm. M._____Buies Creek
Manning, J. M._____Durham
*Miller, J. F._____Goldsboro
Misenheimer, C. A._____Charlotte
*Misenheimer, Thos. F._____Morven

Monroe, W. A._____Sanford
Moore, C. E._____Wilson
Moore, Edwin G._____Elm City
Munroe, J. P._____Charlotte
Nelson, R. J._____Robersonville
*Nicholson, J. L._____Richland
Nicholson, P. A._____Washington
Nicholson, Sam T._____Washington
Nobles, Jos. E._____Greenville
Noble, R. J._____Selma
*Pate, Wm. T._____Gibson
Pemberton, Wm. D._____Concord
Perry, M. P._____Macon
*Pharr, T. F._____Concord
Pharr, Wm. W._____Charlotte
Picot, L. J._____Littleton
*Prince, D. M._____Laurinburg
Purefoy, G. W._____Asheville
*Register, Edw. C._____Charlotte
*Ritter, F. W._____Moyock
Royster, W. I._____Raleigh
Schonwald, J. T._____Wilmington
*Shaffner, J. F., Sr._____Winston-Salem
Shamburger, J. B._____Star
Sikes, G. T._____Grissom
Smith, R. A._____Goldsboro
Snipes, E. P._____Jonesboro
Speight, R. H., Sr._____Whitakers
Stamps, Thos._____Lumber Bridge
Stanton, D. A._____High Point
*Stevens, J. A._____Clinton
Stevens, M. L._____Asheville
Strickland, Edw. F._____Bethania
Summerell, E. M._____China Grove
Tayloe, D. T._____Washington
*Taylor, I. M._____Morganton
*Thomas, G. G._____Wilmington
Trantham, H. T._____Salisbury
Tull, Henry_____Kinston
Van Pool, C. M._____Salisbury
*Von Ruck, Karl_____Asheville
Ward, W. H._____Plymouth
Way, J. Howell_____Waynesville
Weaver, H. B._____Asheville
*Whitaker, R. A._____Kinston
White, J. W._____Wilkesboro
Whitehead, John_____Salisbury
*Whitehead, W. H._____Rocky Mount
Whitfield, Wm. Cobb_____Grifton
Whittington, W. P._____Asheville
*Williams, J. H._____Asheville
Wilson, A. R._____Greensboro
*Young, R. S._____Concord

*Deceased.

HONORARY MEMBERS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

*L. McL. Tiffany_____Baltimore, Md.
W. W. Keen_____Phalidelphia, Pa.
J. Allison Hodges_____Richmond, Va.
*R. L. Payne_____Norfolk, Va.
*J. N. McCormack_____Bowling Green, Ky.
R. L. Payne, Jr._____Norfolk, Va.
J. L. Ludlow, C. E._____Winston-Salem
Paul V. Anderson_____Richmond, Va.
Stuart McGuire_____Richmond, Va.
William J. Mayo_____Rochester, Minn.
William Seaman Bainbridge_____New York, N. Y.
William Sharp_____New York, N. Y.

*Deceased.

OFFICERS, 1922-1923

President—Dr. John Wesley Long, Greensboro
First Vice-President—Dr. F. M. Hanes, Winston-Salem
Second Vice-President—Dr. T. C. Johnson, Lumberton
Third Vice-President—Dr. B. L. Long, Hamilton
Secretary-Treasurer (1922-1925—Dr. L. B. McBrayer, Sanatorium

OFFICERS, 1923-1924

President—Dr. J. Vance McCougan, Fayetteville
First Vice-President—Dr. J. L. Spruill, Sanatorium
Second Vice-President—Dr. Eugene B. Glenn, Asheville
Third Vice-President—Dr. D. A. Garrison, Gastonia
Secretary-Treasurer (1922-1925)—Dr. L. B. McBrayer, Sanatorium

COUNCILORS, 1922-1925

First District—Dr. H. D. Walker, Elizabeth City
Second District—Dr. J. C. Rodman, Washington
Third District—Dr. E. S. Bullock, Wilmington
Fourth District—Dr. K. C. Moore, Wilson
Fifth District—Dr. A. McNiel Blair, Southern Pines
Sixth District—Dr. J. M. Templeton, Cary
Seventh District—Dr. B. J. Witherspoon, Charlotte
Eighth District—Dr. W. F. Cole, Greensboro
Ninth District—Dr. C. M. Van Poole, Salisbury
Tenth District—Dr. Eugene B. Glenn, Asheville

CHAIRMEN OF SECTIONS, 1924

Public Health and Education—
Dr. R. S. McGeachy, Kinston

Surgery—
Dr. B. J. Lawrence, Raleigh

Eye, Ear, Nose, and Throat—
Dr. John W. MacConnell, Davidson

Secretary, Dr. H. L. Sloan, Charlotte

Gynecology and Obstetrics—
Dr. F. Webb Griffith, Asheville

Pediatrics—
Dr. B. U. Brooks, Durham

Practice of Medicine—
Dr. D. Heath Nisbet, Charlotte

Chemistry, Materia Medica, and Therapeutics—
Dr. W. T. Rainey, Fayetteville

N. C. Section of Medical Veterans and Medical Officers Reserve Corps, U. S. A.—
Dr. Charles O'H. Laughinghouse, Greenville

DELEGATES

To American Medical Association	Dr. M. L. Stevens (1923) Asheville Dr. H. A. Royster (1923-1924) Raleigh
To Medical Society of Virginia	Dr. C. T. Smith, Rocky Mount Dr. C. S. Lawrence, Winston-Salem Dr. Claude B. Williams, Elizabeth City Dr. Paul H. Ringer, Asheville Dr. C. F. West, Kinston
To South Carolina Medical Association	Dr. Albert W. James, Hamlet Dr. W. R. Kirk, Hendersonville Dr. James A. Martin, Lumberton Dr. Albert S. Root, Raleigh Dr. Henry L. Sloan, Charlotte

COMMITTEES

Public Policy and Legislation	Dr. K. P. B. Bonner, Chm., Raleigh Dr. W. A. Monroe, Sanford Dr. A. A. Kent, Lenoir
Finance	Dr. Foy Roberson, Chm., Durham Dr. W. F. Hargrove, Kinston Dr. J. C. Hall, Albemarle
Obituaries	Dr. A. W. Knox, Chm., Raleigh Dr. C. F. Strosnider, Goldsboro Dr. F. L. Siler, Franklin
Scientific Work†	Dr. E. J. Wood, Chm., Wilmington Dr. Wm. deB. MacNider, Chapel Hill Dr. C. A. Shore, Raleigh
Memorial for the North Carolina Physicians Who Died in the Late War	Dr. J. P. Munroe, Chm., Charlotte Dr. A. J. Crowell, Charlotte Dr. L. B. McBrayer, Sanatorium Dr. J. M. Parrott, Kinston Dr. J. T. Burrus, High Point

PUBLIC HEALTH ADMINISTRATION

President State Board of Health, ex-officio—Dr. J. Howell Way, Waynesville

President Board of Medical Examiners, ex-officio
Dr. L. N. Glenn, Gastonia

President North Carolina Hospital Association, ex-officio
Dr. L. A. Crowell, Lincolnton

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*Appointed in 1922 to serve for five years.

Consider Four-Year Medical School to be Established by the State University	Dr. I. W. Faison, Chm., Charlotte Dr. A. J. Crowell, Charlotte Dr. J. T. J. Battle, Greensboro Dr. J. H. Shuford, Hickory Dr. C. M. Van Poole, Salisbury Dr. E. T. Dickinson, Wilson Dr. L. B. McBrayer, Sanatorium Dr. W. L. Dunn, Asheville Dr. H. H. Briggs, Asheville Dr. David T. Tayloe, Washington Dr. J. F. Highsmith, Fayetteville Dr. J. V. McGougan, Fayetteville Dr. Foy Roberson, Durham Dr. Fred M. Hanes, Winston-Salem Dr. W. P. Holt, Duke Dr. J. Howell Way, Waynesville Dr. E. J. Wood, Wilmington Dr. E. M. McIver, Jonesboro Dr. Cyrus Thompson, Jacksonville Dr. W. F. Hargrove, Kinston Dr. J. M. Parrott, Kinston Dr. C. O'H. Laughinghouse, Greenville Dr. Ivan P. Battle, Rocky Mount Dr. T. E. Anderson, Statesville Dr. A. C. Everett, Rockingham Dr. Peter John, Laurinburg Dr. W. H. Cobb, Goldsboro Dr. R. H. Lewis, Raleigh Dr. W. S. Rankin, Raleigh Dr. Hubert A. Royster, Raleigh
Automobile Insurance	Dr. J. T. Burrus, Chm., High Point Dr. F. M. Hanes, Winston-Salem Dr. R. Duval Jones, New Bern
X-Ray Therapy in Eye, Ear, Nose and Throat Work (Appointed by Section on Eye, Ear, Nose and Throat)	Dr. J. W. MacConnell, Chm., Davidson Dr. John B. Wright, Raleigh Dr. O. C. Daniels, Goldsboro Dr. Louis N. West, Raleigh Dr. W. C. Horton, Raleigh
Clinics (Appointed by Section on Eye, Ear, Nose and Throat)	Dr. J. W. MacConnell, Chm., Davidson Dr. V. M. Hicks, Raleigh Dr. John B. Wright, Raleigh Dr. J. Gerald Murphy, Wilmington Dr. H. H. Briggs, Asheville
Arrangements	Dr. Albert Anderson, Chm., Raleigh
Place of Meeting, 1924	Raleigh

PROGRAM

MONDAY, APRIL 16, 6:30 P. M.

DINNER MEETING

Organization Candidate School for Fellowship in American College of Surgeons.

GENERAL SESSIONS

TUESDAY, APRIL 17, 9:00 A. M.

OPENING EXERCISES

Call to Order:
Dr. Eug. B. Glenn, Chairman of the Committee on Arrangements, Asheville.

Invocation:
Reverend O. J. Chandler, D.D., Central Methodist Church, Asheville.

Address of Welcome:
Hon. Gallatin Roberts, Mayor of Asheville.

Response:
Dr. Foy Roberson, Durham.

President's Address:
Dr. J. W. Long, Greensboro.

Announcements:
Chairman of Committee on Arrangements.
Secretary.

TUESDAY, APRIL 17, 10:00 A. M.

Meeting of the House of Delegates.

TUESDAY, APRIL 17, 6:30 P. M.

DINNER MEETING

Past Presidents and Honorary Fellows of the State Society and Officers of State, District and County Societies.

Dr. Louis V. Hamman, Associate Professor of Clinical Medicine, Johns Hopkins University, Baltimore: The American Medical Association.

Dr. J. W. Long, President Medical Society of the State of North Carolina; Organized Medicine—The State Society, the Council, the District Society, the County Society.

Dr. J. Howell Way, Past President and Past Secretary, President State Board of Health: The Past Presidents.

Dr. Eug. B. Glenn, President of the Council, Councilor Tenth District—(a) The Council; (b) The District Medical Society.

Dr. W. E. Coltrane, President County Secretaries' Association: The Secretaries of Our County Societies.

Dr. J. C. Montgomery, President Mecklenburg County Medical Society: The Presidents of Our County Societies.

TUESDAY, APRIL 17, 8:00 P. M.

1. Addresses in Honor of the Past Presidents and Honorary Fellows of the Medical Society of the State of North Carolina—Dr. W. W. Keen, Philadelphia, Pa.; Dr. Cyrus Thompson, Jacksonville.

2. Address on Surgery: Surgical Treatment in Diseases of the Thyroid Gland—Dr. J. deJ. Pemberton, of the Mayo Clinic (home address Fayetteville, N. C.)

3. Address in Medicine: The Diagnosis of Pulmonary Tuberculosis—Dr. Louis V. Hamman, Associate Professor of Clinical Medicine, Johns Hopkins University, Baltimore.

WEDNESDAY, APRIL 18, 9:00 A. M.

Meeting of the House of Delegates.

WEDNESDAY, APRIL 18, 10:30 A. M.

Organization Meeting of the Woman's Auxiliary to the Medical Society of the State of North Carolina

Mrs. P. P. McCain, Organization Chairman, Sanatorium.

Address—Mrs. S. C. Red, President of the Woman's Auxiliary to the American Medical Association, Houston, Texas.

WEDNESDAY, APRIL 18, 12:00 M.

Conjoint Session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health (Dr. J. Howell Way, President State Board of Health, presiding).

Report of Work Accomplished and Recommendations.

Discussions.

New Business.

Adjournment.

WEDNESDAY, APRIL 18, 8:00 P. M.

1 Report of the Board of Medical Examiners—Dr. K. P. B. Bonner, Secretary-Treasurer, Raleigh.

2. Report of the Committee on Obituaries—Dr. Chas. O'H. Laughinghouse, Chairman, Greenville; Dr. E. T. Dickinson, Wilson; Dr. W. L. Dunn, Asheville.

WEDNESDAY, APRIL 18, 8:00 P. M.

Meeting of the Railway Surgeons' Association of North Carolina

Dr. J. V. McGougan, President, Fayetteville.
Dr. J. Rainey Parker, First Vice-President, Burlington.
Dr. A. W. Knox, Second Vice-President, Raleigh.
Dr. T. C. Johnson, Third Vice-President, Lumberton.
Dr. J. W. Halford, Secretary-Treasurer, Lillington.

THURSDAY, APRIL 19, 11:30 A. M.

Report of House of Delegates.
Installation of Officers, 1923-24.
Resolutions.
Miscellaneous Business.
Adjournment.

SECTION MEETINGS

Section on Hospitals

Continuous Scientific Exhibits

Dr. L. A. Crowell, Chairman, Lincolnton.

1. The Practical Application of Vocational Therapy as Illustrated in the Work Exhibited—State Hospital, Dix Hill, Raleigh.
2. Graphic Records of the Action of Drugs in Animals—Dr. Wm. deB. MacNider, Chapel Hill.
3. Photographs, X-Ray Films and Pathological Specimens—Crowell Clinic, Charlotte.
4. Exhibit of Apparatus in Current Use, Photographs of the Plant and a Few Cases—Dr. O. L. Miller, North Carolina Orthopedic Hospital, Gastonia.
5. Exhibit of Pathological Specimens—Dr. B. T. Terry, Nashville, Tenn.
6. Exhibit by Drs. W. D. and A. W. James, Hamlet.
7. Moving Picture: "Reward of Courage"—A Cancer Film from the American Society for the Control of Cancer.

TUESDAY, APRIL 17, 10:00 A. M.

Section on Gynecology and Obstetrics

Dr. Ivan Proctor, Chairman, Raleigh.

1. Chairman's Address: A Plea for Better Obstetrics in the State of North Carolina—Dr. Ivan Proctor, Raleigh.
2. Obstetrics Is Surgery—Dr. H. S. Lott, Winston-Salem.
3. The Diagnosis and Treatment of Pyelitis—Dr. J. D. Highsmith, Fayetteville.
4. Prenatal Care—A Responsibility of the Obstetrician—Dr. K. P. B. Bonner, Raleigh.
5. Curettage—When Should It Be Done?—Dr. R. R. Ivey, Asheville.
6. Application in Pregnant Women of Widal's Haemoclastic Liver Test—Dr. Oren Moore, Charlotte.
7. Bladder Disturbances in Women—Dr. Frank D. Worthington, Charlotte.
8. Premature Separation of the Placenta—Report of a Case—Dr. Hubert Haywood, Jr., Raleigh.
9. Podalic Version in the Care of Placenta Praevia at or Near Term—Dr. M. C. Parrott, Kinston.
10. The Causes and Mechanism of Menstruation, with the Most Frequent Disorders of the Same—Dr. J. Ernest Stokes, Salisbury.
11. Observations at the Chicago Lying-In Hospital—Dr. George Johnson, Wilmington.

TUESDAY, APRIL 17, 10:00 A. M.

Section on Practice of Medicine

Dr. J. V. McGougan, Chairman, Fayetteville.

1. Chairman's Address: Diabetes Sufferers Given a Message of Hope—Dr. J. V. McGougan, Fayetteville.
2. The Symptomatology and Treatment of Sprue—Dr. Edward J. Wood, Wilmington.
3. The Interruption of Pregnancy in Tuberculosis by Hysterotomy; Production of Sterility; Local Anesthesia—Dr. Foy Roberson, Durham.
   Discussion by Drs. Chas. L. Minor, W. L. Dunn, H. A. Royster.
4. Kahn Precipitation Reaction with Description of a Micro-Modification—Drs. Lester C. Todd and Joseph A. Elliott, Charlotte.
5. The Status of the Practice of Medicine Thirty Years Ago as Compared with Today—Dr. K. G. Averitt, Fayetteville, R. 9.
6. The Presenting Symptoms, Findings and Ultimate Diagnosis in 500 Consecutive Cases Presented for Ureteral Catherization—Drs. Raymond Thompson and Lester C. Todd, Charlotte.
7. North Carolina's University Extension Postgraduate Courses in Medicine—Dr. Frederick R. Taylor, High Point.
8. Influenza (in verse)—Dr. N. P. Coppedge, Biscoe.
9. The Role of the Endocine Glands in Organotherapy—Dr. H. B. Weaver, Asheville.
10. The General Practitioner and His Relation to the Tuberculosis Problem—Dr. C. M. Cheadle, Asheville.
11. Diagnosis in Borderline Medico-Surgical Cases—Dr. H. H. Newman, Salisbury.
12. Narcotic Drug Addiction Disease—Dr. W. C. Ashworth, Greensboro.

TUESDAY, APRIL 17, 2:00 P. M.

Section on Public Health and Education

Dr. Wm. M. Jones, Chairman, Greensboro

1. Chairman's Address: Some of North Carolina's Problems—Dr. Wm. M. Jones, Greensboro.
2. Some Medical Prophecies—Dr. Jos. L. Spruill, Sanatorium.
3. Conjugal Tuberculosis—Dr. J. T. J. Battle, Greensboro.
4. A Further Study of the Problem of Clinical Medical School in North Carolina—Dr. Isaac H. Manning, Chapel Hill.
5. The X-Ray as a Diagnostic and Therapeutic Agent—Dr. R. H. Lafferty, Charlotte.

6. The Triad in the Diagnosis of Syphilis—Dr. J. A. Keiger, Greensboro.
7. Some Modern Clinical Laboratory Procedures of Value to the General Profession—Dr. H. L. Brockmann, High Point.
8. Delivering a Message of Health to the Public—Dr. R. L. Carlton, Winston-Salem.
9. Public Health Work in Highlands—Dr. Mary E. Lapham, Highlands.

TUESDAY, APRIL 17, 2:00 P. M.

Section on Surgery

Dr. J. W. Gibbon, Chairman, Charlotte.

1. Chairman's Address—Harelip and Cleft-Palate Considerations—(Lantern Slides)—Dr. J. W. Gibbon. Charlotte.
2. Perforated Ulcer of the Stomach and Duodenum—Dr. F. G. Dubose, Selma, Alabama.
3. Gastric Ulcer—Dr. L. A. Crowell, Lincolnton.
4. Some Phases of Industrial Surgery—Dr. F. Webb Griffith, Asheville.
5. Case Reports of Some Unusual Conditions—Drs. Henry Norris and R. H. Crawford, Rutherfordton.
6. Treatment of Traumatic Cranial Injuries—Drs. D. W. and Ernest S. Bulluck, and R. H. Davis, Wilmington.
7. Epidemic Encephalitis, with Report of Cases—Dr. J. W. Tankersley, Greensboro.
8. Observations in 175 Cases of Pyelonephritis—Dr. W. C. Stirling, Winston-Salem.
9. Closed Method of Treatment of Empyema vs. Rib Resection, with Report of Ten Cases of Each—(Lantern Slides)—Dr. G. Carlyle Cooke, Winston-Salem.
10. Deep Radiation Therapy in Inoperable Carcinoma of Uterus and Breast—Dr. Julian M. Baker, Tarboro.
11. Remarks on the Type of Anesthesia in Extreme Surgical Risks—Dr. B. J. Lawrence, Raleigh.
12. Tumors of the Intestine Causing Intussusception—Report of Cases—(Lantern Slides)—Dr. John P. Kennedy, Charlotte.
13. Congenital Pyloric Stenosis; Report of Twelve Cases—Dr. R. L. Gibbon, Charlotte.
14. Calcareous Changes in the Prostate Gland, Illustrated by Report of Case—Dr. Hamilton W. McKay, Charlotte.
15. Renal and Ureteral Calculi—Drs. Foy Roberson and W. M. Coppridge, Durham.

16. Purgation Without Definite Indication in Doubtful Intra-Abdominal Conditions—Dr. D. T. Tayloe, Jr., Washington.

17. Symposium: The Relation Between Surgery, X-Ray and Radium Treatment.
X-Ray—Dr. W. P. Whittington, Asheville.
Radium—Dr. A. B. Greenwood, Asheville.
Surgery—Dr. A. T. Pritchard, Asheville.

18. Surgery of the Thyroid Gland—Dr. J. T. Burrus, High Point.

19. Surgery in South America—Dr. A. J. Crowell, Charlotte.

TUESDAY, APRIL 17, 2:00 P. M.

Section on Pediatrics

Dr. John R. Ashe, Chairman, Charlotte.

1. Chairman's Address: Some Difficulties in Early Breast Feeding—Dr. J. R. Ashe, Charlotte.

2. Transfusion in Hemorrhagic Diseases of the Newborn—Dr. J. Buren Sidbury, Wilmington.

3. Infectious Diarrhea—Dr. Needham B. Broughton, Raleigh.

4. Pyelitis in Children—Dr. James A. Martin, Lumberton.

5. The Importance of Group Study and Care of the Undeveloped Child—Dr. Frank A. Sharpe, Greensboro.

6. Purulent Meningitis, with Case Report—Dr. W. C. Verdery, Fayetteville.

7. The Role of Transfusion in Pediatrics—Dr. H. H. Harrison, Asheville.

8. Should Fever Be Treated?—Dr. John LaBruce Ward, Asheville.

WEDNESDAY, APRIL 18, 2:00 P. M.

Section on Eye, Ear, Nose and Throat

Dr. J. B. Greene, Chairman, Asheville.

Dr. Henry L. Sloan, Secretary, Charlotte.

1. Chairman's Address: Acute Otitis Media in Children—Dr. Joseph B. Greene, Asheville.

2. Corneal Ulcer—Dr. J. G. Johnson, Charlotte.

3. Methods of Examination for Heterophoria—Dr. H. H. Briggs, Asheville.

4. The Eye and Intra-cranial Conditions, with Report of Cases—(Lantern Slides) —Dr. Henry L. Sloan, Charlotte.

5. Malignant Tumors of the Naso-Pharynx—Dr. H. C. Shirley, Charlotte.

6. The Diseased Tonsil—Dr. John A. Patterson, Concord.

WEDNESDAY, APRIL 18, 2:00 P. M.

Section on Chemistry, Materia Medica and Therapeutics

Dr. Ben H. Hackney, Chairman, Lucama.

1. Chairman's Address: Pituitrin in the Treatment of Non-Surgical Enuresis—Dr. Ben H. Hackney, Lucama.
2. Pyelitis in Children—Dr. C. S. Strosnider, Goldsboro.
3. Chronic Nephritis—Dr. Paul N. Neal, Raleigh.
4. Early Chronic Nephritis—Dr. W. H. Smith, Goldsboro.
5. Rhus Poisoning and Tannic Acid as a Treatment—Dr. L. J. Smith, Wilson.
6. The Relation of Blood Infection to Focal Infection—Dr. W. R. Stanford, Durham.
7. X-Ray Treatment of Superficial Lesions—Dr. Robert P. Noble, Raleigh.
8. The Pharmacology of Aconite—Dr. W. deB. MacNider, Chapel Hill.
9. A Review of Our Last Three Years' Laboratory Work—The North Carolina Sanatorium Staff.

THURSDAY, APRIL 19, 9:00 A. M.

N. C. Section of Medical Veterans and Medical Officers' Reserve Corps, U. S. A.
Chairman, Lt. Col. Joseph H. Way, Med-ORC, Waynesville.

Vice-Chairman, Lt. Col. Charles O'H. Laughinghouse, M. C. (emergency), Greenville.

Honorary Chairmen, Lt. Col. Addison G. Brenizer, M. C. (emergency), Charlotte, and Major Marshall H. Fletcher, M. C. (emergency), Asheville.

1. Chairman's Address—Lt. Col. Jos. H. Way, Med-ORC, Waynesville.
2. The Medical Man and National Defense—Major D. C. Absher, M. C., U. S. Army.
3. Uncinariasis as a Complication of Tuberculosis—Major George E. Barksdale, Med-ORC., Oteen.
4. The Functions of Base Hospital No. 61, in France—Lt. Col. Charles S. Lawrence, Med-ORC., Winston-Salem.
5. Recent Observations and Advantages of the Rubin Test for Sterility—Major R. T. Ferguson, Med-ORC., Charlotte.
6. Photomicrography Without a Camera—Major James B. Bullitt, Med-ORC., Chapel Hill.
7. Observations in 175 Cases of Pyelonephrosis—Captain W. C. Stirling, Med-ORC., Winston-Salem.
8. Significance of Occurrence of a Contagious Disease in an Army Camp—Major Thomas A. Hathcock, Med-ORC, Norwood.

9. Why a Medical Veterans' Section—Lt. Col. Charles O'H. Laughinghouse, M. C. (emergency), Greenville.

10. The Need of a Medical Officers' Reserve Corps—Major Joseph F. Abel, Med-ORC., Waynesville.

11. The Medical Veterans of the World War—Col. Arthur T. McCormack, Med-ORC., Louisville, Ky. (President Medical Veterans of the World War).

12. The Tuberculous Ex-Service Man and the Medical Reserve Officer—Major R. McBrayer, Med-ORC., Sanatorium.

13. Importance of the Medical Profession of North Carolina Aiding in the Collection of Historical Material Relating to the World War—Mr. R. B. House, North Carolina Historical Commission, Raleigh.

14. Some Random Post-War Thoughts on Endocrines—Captain Francis M. Davis, Med-ORC., Canton.

15. The Effort Syndrome—Captain James E. Kerr, Med-ORC, Winston-Salem.

TRANSACTIONS

of the

SEVENTIETH ANNUAL SESSION

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

GENERAL SESSIONS

OPENING EXERCISES

TUESDAY MORNING, APRIL 17, 1923

The Society was called to order by Dr. Eugene B. Glenn, of Asheville, Chairman of the Committee on Arrangements.

INVOCATION

REV. O. J. CHANDLER, D.D.

Assistant Pastor Central Methodist Church, Asheville

Our Father, who art in heaven, we are thankful that there is above us a Power that is mightier than we ourselves, and that this Power exercises itself in the shaping of our ends, not as a mechanical force, but by the life of a great Life that is dynamic in its magnificent example. We rejoice because that Life is the gift of love, for "God so loved the world that He gave His only begotten Son, that whosoever believeth in Him should not perish, but have everlasting life." That gift has brought to us every other good and perfect gift. For this reason we pause this morning, before entering upon the work of the day, that we may be thankful. There is nothing more becoming in us than we should wait in Thy presence and in humbleness of heart say: Father, we thank Thee for the many benefits Thou hast bestowed upon us. Thou hast not withheld from us the comforts of life, for Thou hast seen that food and raiment and shelter shall be ours. When the shadows of evening gather, Thou hast made our beds, that we may lie down and sleep; and when the morning wakes Thou hast kissed our eyes with the morning light, that we may see the beauties of the world.

All our days have not been bright and warm; rains and snow have hid our sun from shining upon us, but these, too, have been given in love, that they might strengthen us, and when we have been compelled to walk in the dark and come face to face with our disappointments, often we have found that they have been God's appointments to keep us humble and to put richer tone into our souls. Our Father, everything that has come to us by God's order has been good, and we are glad. Our

sins and follies have hurt us and grieved us, and we repent ourselves this morning that we have ever sinned against Thee, our gracious Lord. The cry of our souls is "Have mercy upon us, most merciful Father, and cast our sins from us as far as the east is from the west." We thank Thee for the wonderful Saviour we have in Jesus Christ, at whose birth the world bestirred itself with the expectancy of a new hope, who came down from heaven to put within the skeleton ribs of a sinking world a new heart, who paid upon the cross the price of our redemption, and stepped into the grave to win the victory over our last enemy, for "the last enemy that shall be destroyed is death." We thank God for the Saviour who walked through all the lanes through which His children would be called to go.

We thank Thee, our heavenly Father, for these men who are assembled here to study ways and means by which they can carry out the aims of our Lord, for He told us to go into all the world to preach the Gospel and heal the sick. We thank Thee for the world's great leaders in the realm of medical science. As Thou hast given peaks to the mountain ranges to catch the morning light, so Thou has put among us lofty souls with great vision, that they might bring their knowledge to soothe the pains and heal the sicknesses of humanity. God bless these men, whom Thou hast sent to seek the healing oils and anodynes in the plants that grow, that they may bring them forth to antidote for the fatal poison in the blood of their fellow-men. They come so close to us, our Father, when they stand by our bedsides to minister to us in illness. Grant that by the very bigness of their lives, and the purity of them, they may inspire us to better things. Bless their homes; put a guardian angel by every portal.

Hear us in all these petitions, and forgive us all our sins, for we ask it in Jesus' name. Amen.

Dr. Glenn:

It has often been said that everyone comes to Asheville some time. We are so glad to have you come this time that we have arranged to give you a royal welcome, and there is no more fitting person to turn over everything to you than our honorable Mayor. So I now present to you the Honorable Gallatin Roberts, Mayor of Asheville, who will welcome you.

ADDRESS OF WELCOME

Gallatin Roberts, Mayor of Asheville:

I have often wished, during the last several years, that I might see all the doctors of North Carolina assembled in a body, and after viewing them and looking them over that I might see all the lawyers of North Carolina in a body, and look them over, and then turn and see all the ministers of the Gospel in a body, and look them over. Of course I shall never have such an opportunity, but I wish that I might have that privilege—that experience; it would be highly interesting and entertaining.

I know of no organization in this State for which I have more really genuine enthusiasm than I have for the doctors of North Carolina. I do not say that by way of flattery, because I mean every word that I say. The first real inspiration that I received along lines of health and health matters in this State came from my good friend Dr. McBrayer. And then, soon after that, I became acquainted with Dr. Rankin, at Raleigh, and with Dr. Glenn, our splendid Chairman on this occasion, and from them I received real, genuine inspiration.

I rejoice this morning at the progress that medical science and health are making in our State today. The eyes of the world are riveted upon North Carolina, and I am glad that I have lived to see the day come when we are attracting the attention not only of the United States but of the entire world, on account of the great progress that we are making along lines of education, along lines of health and civic development and civic righteousness. So I am delighted to leave my duties at the City Hall and come here to extend to you, every one of you, a sincere and cordial welcome to Asheville—a city that is growing with leaps and bounds along all lines of civic development, along educational lines, along health lines, and along almost every line that you might mention. And that is the situation, not only here, but all over North Carolina; in Charlotte, in Raleigh, in Wilmington and Greensboro and Winston-Salem, in all the towns of the State, and we are delighted to know that this is true.

Gentlemen of the Medical Society of the State of North Carolina, assembled here in your annual convention, I bespeak for our City that you see it before you leave it. Come up and look us over. If you will, just drop in at the City Hall, and Dr. Reynolds will be glad to show you over the office of our bacteriologist, so that you may see just how much care the City is taking to protect the lives and the health of its people. It costs money, but we think it is worth it. I know that you will be glad, if you have an opportunity, to drop in there and see just how we are doing these things.

Gentlemen, North Carolina is just beginning to do what she ought to do. Let me tell you a little experience I had the other day. It made me sad to know that such things exist in this State, because no adequate provision has yet been made to take care of this situation. A few days ago a man came into my office, whom I well know; he lives in this county. He told me that he has a little boy in his home, nine years old, simple, feeble-minded, and he said: "I have to keep that little fellow tied in the corner to keep him from getting in the fire and burning himself to death." I wrote to Dr. McNairy, at Kinston, to see if he could take the child into the Caswell Training School. I know Dr. McNairy very well; Dr. McBrayer knows him; Dr. Glenn knows him; many of you gentlemen know him. I wrote Dr. McNairy fully, a few days ago, telling him the facts about this poor little fellow, who lives just ten miles from here. I told the facts just as they are, and asked Dr. McNairy if he could take the boy into his institution. He wrote back at once that he was sorry, there was no room anywhere, but that he would put the application on file and take him as soon as possible. Now, gentlemen,

that is just one instance, and I venture the assertion that there are hundreds of cases like that in North Carolina, and yet there is no place provided. We are spending millions and millions on public roads; millions and millions on education, and that is right; but we ought to dig just a little deeper, and make provision for God's children like that. Some day I shall go out to see that little boy. He is right out here in the country. I shall see if we cannot get that little boy into that institution yet. It can be done.

(Dr. I. W. Faison: "It shall be done.")

North Carolina is a rich State, and every possible effort should be put forth to provide comfortable homes for the unfortunate little children who come into the world with their lives blighted and the future all dark.

I am not a doctor nor the son of a doctor, but one thing I stand flat-footed upon, and foursquare to every breeze that blows: North Carolina ought to provide one of the finest medical colleges in the Union. They turned it down in Raleigh for some reason; but let us have that institution; let us put North Carolina on the map, not only educationally but along lines of health and real, genuine development.

Did you ever hear that story of the surgeon who wrote the printer a letter? A surgeon wrote a printer that he wanted several thousand letterheads of various kinds and colors, and he wanted the forms to remain standing so that in case he needed more he could get them at once. Well, the printer was rather a humorous fellow, and he wrote back as follows: "Dear Sir: I am in the market for an appendix operation, one, two or three inch incision, with or without ether; with or without nurse. Quotation must provide that if appendix is not diseased, it must be returned. Also, quotation must provide that incision must remain open for sixty days, because I expect to be in the market for an operation for gallstones at an early date, and I want to save the expense of a second cutting."

I like to talk to men who have vision, and who think and act. I tell you what I believe, my friends: I believe the time will come in North Carolina—and I am not a prophet nor the son of a prophet—I used to talk to Dr. McBrayer about it years ago, and he will doubtless remember it—I believe the time will come, just as I believe I am standing on this platform this morning, when every county in North Carolina, every one of the hundred counties, will have a whole-time health officer. I believe the time will come, and come perhaps more quickly than we imagine, when every city in North Carolina of any appreciable size, will have a whole-time health officer. Why, gentlemen, do you know one thing? I do not care how efficient your health officer may be, and Asheville can certainly claim that she has as good as there is in North Carolina; I do not care how efficient he may be, it is impossible for a man giving only part of his time to the city or county to do the work that should be done. You know that is a fact. There is nothing in the world more important than real health work, so the time will come when these things will take on new life and we shall take a forward step

along the lines that mean so much to the health of the people and the progress of the State.

A minister of the Gospel had just performed a marriage ceremony, and he had done it beautifully. The young fellow was rather inexperienced and affected somewhat with timidity. After the ceremony had been concluded, the good minister told the young fellow to turn and salute his bride. The bridegroom, in his confusion and embarrassment —for, as you know, it is rather a confusing time—turned and grasped the hand of his newly-made wife and said: "I am darned glad to meet you." So this morning, ladies and gentlemen, we are glad to have you in Asheville. We want you to have a good time, and we know that you will. We like to boast, as do most people. I do not object to a man's boasting about his home and his people—in fact, I think a real, one hundred per cent man will always do that. We want you to see Asheville, see our streets and buildings and hotels, anything you desire to see around Asheville. We have many things of interest here. Don't stay in this hotel all the time, but get out on some of our fine roads. (By the way, if you will take the time to drive over the road from here to Black Mountain, or even a part of the way to Black Mountain, when you come back if you do not say that is the prettiest drive you have ever taken in your life, I will pay the automobile hire. Go out to Sunset Mountain, too, and to our new Country Club, near Biltmore). And you should see our fine school buildings. We have spent $700,000 on school buildings. We think, too, that Asheville has some things which other North Carolina cities do not have—though we hope you will contradict us if you desire.

By the way, before I forget it—I did not like the report that came flashing over the wires from one of our Northern States that said people ought not to move South to establish manufacturing industries, for the reason that hookworm disease and malaria and things of that sort are prevalent here. I did not like that because it is not true, but I laughed at it, because I know the reason it was made. It was made because the eyes of the whole world are riveted upon the South, and some of our good friends who live in other sections of the country are getting to be a little jealous because the South is coming into her own. But it does not amount to anything at all, for everybody realizes why it was done, and North Carolina and every other Southern State stands ready to refute the charge and to show the world that we have the best country in the world to live in. The South will soon be an empire industrially, in health work, and in every other way, and I know of no set of men who are doing more to develop the South than the doctors. That is true. Without good health laws and good health conditions no community can live and thrive and develop. Therefore, I believe that this organization has a great work to do in North Carolina, and that the service you are rendering is of incomparable value to this commonwealth.

Gentlemen, I thank you very much.

Dr. Glenn, Chairman:

I now introduce to you Dr. Foy Roberson, of Durham, who will respond, on behalf of the Medical Society of the State of North Carolina, to the welcome so graciously given us by the Mayor of Asheville.

RESPONSE TO ADDRESS OF WELCOME

Foy Roberson, M.D., Durham:

I had thought that I had a pretty good speech of response to Mayor Roberts' welcome, but I have forgotten almost all of it, so interested was I in his address. I saw him at the door before I came in, and told him how glad we are to be here, and how much we appreciate the wonderful reception we have already had. I also saw Dr. Cyrus Thompson at the door, and made arrangements with him to take my place if I fall down entirely.

As citizens of North Carolina, we are especially proud of what Mayor Roberts said about this State along educational lines, in the building of good roads, and in other ways. We feel that our own profession has had its part in this development. Everywhere new hospitals are springing up, and our physicians compare favorably with the best in the land. Our State Board of Health has accomplished wonderful things. Typhoid fever is rapidly becoming a rare disease, and other diseases are coming under control. I believe we shall see the day, if we can forestall political investigations, when the control of tuberculosis will be accomplished. We are proud of Asheville, a city which has a national reputation as a health resort, and it is a great pleasure to be here. Once each year we assemble to discuss medical problems and surgical problems and to become better acquainted with each other, and I am sure that, in the midst of this beautiful monutain scenery, we shall have the best meeting that we have had in years.

Mayor Roberts, on behalf of the Medical Society of the State of North Carolina, I desire to express our appreciation of your wonderful address of welcome.

Dr. I. W. Faison, Charlotte:

I happen to be a member of the Board of Directors of the Caswell Training School, and I am going down there next week. I wish to ask Mayor Roberts to write me about the little boy of whom he told us, because I might forget it otherwise, and if there is a hole big enough to put a rat in I will get his boy in. I appeared before the Committee in Raleigh, and they voted us $500,000. We were $75,000 in debt already, and Governor Morrison allowed us to go in debt $50,000 more. That debt of $125,000 will have to be paid, but next week we are going to let the contract for more buildings.

Dr. Glenn, Chairman:

Saving the best for the last, it is my pleasure to introduce to you now our honored and beloved President and wise leader, Dr. John Wesley Long, of Greensboro.

PRESIDENT'S ADDRESS

LOOKING FORWARD

JOHN WESLEY LONG, M.D., F. A. C. S., Greensboro:

Mr. Chairman, Members of the Society, Ladies and Gentlemen:

Before selecting a subject for this occasion I reviewed the history of the Medical Society of the State of North Carolina from its organization in 1849, indeed I might say 1799. I have in my library all of its Transactions except those for five years. Of course I value them very highly. I hold in my hand the first volume, which is literally worth its weight in gold. The presidential addresses naturally attracted my attention. The most cursory examination of them reveals a wealth of knowledge, oratorical powers, a breadth of vision and an experience that is astounding. Furthermore, they give one the sub-conscious impression that he is treading upon holy ground. I found myself with the mental admonition that to attempt to excel even the least of these great men, from William Strudwick, in 1849, to Hubert A. Royster, in 1922, would be the utmost foly on my part. The presidential addresses alone constitute a comprehensive history of medicine in North Carolina; indeed, I might say of that period for the entire country. That our forebears kept in touch with the advances in medicine is shown by the fact that delegates to the American Medical Association were required to make a written report of what they saw and heard. I shall recommend right in the beginning that this time-honored custom be re-established; in fact, the present delegates have been notified to prepare a written report for this meeting.

In the light of this history, I shall indulge in no flights of oratory nor shall I attempt to amuse or even to instruct my hearers beyond the simple statement of facts and the lessons to be learned therefrom. I shall offer in the most prosaic way certain observations regarding the present status and the future of our Society. Should the importance of what I may say justify a title, it might be called "Looking Forward."

If in my frankness I call your attention to certain weak places in our lines of defence that need strengthening or to some strategic situation where we should go over the top with a whoop, don't think that I am knocking. Remember, please, that I have wandered with you in the wilderness for lo! these forty years. My heart's desire is simply to direct your minds away from the weariness of the desert over which we have traveled to the glories of the promised land beyond.

We are proud, and justly so, of what the Medical Society of the State of North Carolina has accomplished. We rejoice in the achievements of our forefathers. Our inheritance from them is the most sacred thing that we possess. Upon the history of our Society is builded our professional character, our ethics, our reputation in State and Nation, our ambitions, our expectations for the future. Standing upon the ramparts of the present, with our eyes trained upon the veiled and

uncertain future, let us thank God and take courage, as did St. Paul when he came within sight of the three towers. We have seen the morning star of hope rise in the east; we have labored joyously and consistently under the illuminating rays of the sun of scientific knowledge as it has mounted in the heavens toward the zenith, now let us look to the west and press forward in the high calling of our noble profession as exemplified in the teachings of the Great Physician. Progress, then, shall be the burden of my song.

That the Society has made good in the discharge of its manifold responsibilities to the profession and the public can not be gainsaid. But, no matter how well we have wrought, we should strive to do far greater work in the future than anything we have yet accomplished. We should adjust ourselves to the times in which we live. Posterity's estimate of our efficiency will be predicated not so much upon what we actually do as upon the use we make of the opportunities we possess.

While I was on duty with Provost Marshal Crowder and representing the State in that capacity, he called us to Washington for a conference. Among other things he related an experience while military observer with the Japanese Army in the Russo-Japanese War. He said that whenever the Japs gained any territory they never yielded a foot. When they were complimented upon their wonderful achievements, as he heard done many times, they always said with a courtesy: "We are sorry, sir, that we have not done better."

The opportunities before us are real, every-day problems. Let's take the one nearest at hand; namely, our membership. Let me remind you that our position, representing as we do organized medicine in the State and operating under a charter from the Legislature, automatically places heavy responsibilities upon us, both as a legalized profession and as individuals. Do you realize that it is our duty to secure the membership of every qualified physician in the State? To use the words of Chapter IV, Section 6, of our By-Laws: "We shall continue these efforts until every physician in every county of the State who can be made reputable has been brought under medical society influences." Therefore it is not a matter of choice with us, but one of obligation. Of course, in its last analysis this is largely the work of our component units, the county societies, many of which have done nobly along this line. A number of them will report at this meeting one hundred per cent membership. With the co-operation of Dr. L. B. McBrayer, our most efficient Secretary, sixty new members have been secured this year; but there still remain two hundred physicians who are not, as yet, members of the State Society. Brethren, this thing ought not to be.

Another cogent reason why we should gather into the fold every stray sheep is that "He that is not with us is against us." In these perilous times, when so much spurious stuff in the name of medicine is being promulgated, when there is so much unrest among the great masses of people, till it is "like the sound of a going in the tops of the mulberry trees," when even some of the members of our own household lift up their heel against us, it behooves us to fortify our lines by enlist-

ing the services of every available man, that we may present an unbroken front against the powers of darkness.

I say this not so much from a selfish standpoint as in the interest of the great unthinking public, to whom we owe the most efficient service of which we are capable. The physician's education, his experience with the issues of life and death, his position of authority, all give him an importance in the community that is possessed by no other class of men. You recall that during the World War the Germans estimated the value of a medical officer as equivalent to five hundred soldiers.

The second point to which I would call your attention is our relations to the various medical, surgical, hospital, health and welfare organizations in the State. No two men think exactly alike; we differ in the kind as well as the number of talents we possess. The result is that our activities branch out along different lines. The stars differ from one another in glory, but they all possess the common property of emitting light. In like manner, we must admit that every professional unit in the State, in common with ourselves, is striving for the public good. Between them and this Society there should be a community of interests, an *esprit de corps,* that would redound to the benefit of every one concerned. With this thought in mind let us consider certain phases of the situation that confronts us.

The developments in professional circles during these latter days have been marvelous. Indeed, the achievements of today in medicine, surgery and public health are far removed from those of yesterday. Time will not permit me to mention a single one of them, but I would focus your attention upon the significance of the progressive movements going on all about us. To do so intelligently we must go somewhat into details as regards certain professional matters.

A pertinent question just here is: What part is the Medical Society of the State of North Carolina playing in the development of modern medicine? Is she utilizing to the best advantage possible the forces within her; is she making proper use of the wonderful opportunities confronting her to conserve the health and lives of our people; is she making an effort to meet the responsibilities placed upon her shoulders commensurate with the powers inherent in her personnel? This Society has within itself a veritable Niagara for work along lines of the highest degree of efficiency. But, like Niagara, I fear she wastes a large part of her energies over the falls of least resistance. That our State Society has wrought well has already been asserted. But answer me frankly, has not more work been done by those units that are the outgrowth of the State Society than by the Society itself?

True, we claim and always shall, that while the State Society is getting hoary with age, we stand *in loco parentis* to every kindred organization in the State. I heard an English surgeon say to the father of the Mayo Brothers that he ought to be proud of two such sons. The old man, then in his ninetieth year, slapped himself on the chest and said: "Yes, and they should be proud of such a father as they have." Now,

in order that we may determine whether or not we, as the parent organization, are doing our full duty toward our professional offsprings, certainly enough to warrant their feeling proud of us; we shall discuss briefly the relations between them and ourselves.

The Board of Medical Examiners is our first-born. It was conceived in the desire to legalize the practice of medicine and brought forth as a protest against incompetent traffic in human lives for gain. It first saw the light of day in 1859, thereby antedating every other board of medical examiners in the United States. It stands at the very threshold of the practice of medicine, surgery and public heath. And never in any state or nation have the honor, the high ideals, the welfare of the profession been more loyally safeguarded through all these sixty-four years than they have been by our Board of Medical Examiners. Without it we could never have accomplished what we have, and the State would have been overrun by every ism and quack that could be conceived by the erratic mind of man. We shall always be proud of our elder son!

The next offspring from the Society was the State Board of Health. Perhaps not many of us know that in 1877 Thomas F. Wood induced the General Assembly to make the State Medical Society the Board of Health and to appropriate one hundred dollars for its maintenance. In 1879 the Board of Health was set apart as a separate organization, but has always maintained the most intimate relations with the State Society. Among all the organizations that we possess the State Board of Health deserves the highest rank. Of course it does, is it not a "Rankin" organization? That's a mighty poor pun, but I shall try to make amends by agreeing with Clarence Poe that Dr. Rankin is one of our big men and, let me add, surpassed by none as gubernatorial timber. Do you realize the multiplicity of the activities of the State Board of Health? I confess I don't know myself, but, as detailed in our last Transactions, there are nine separate and independent departments, with innumerable subdivisions, all of them going concerns; more by far than we have sections in the Society itself.

Another evidence of the activities of the State Board of Health, all of which are highly commendable, is the appointment by the State Medical Society of a committee to define "State Medicine;" in other words, to determine just what part of the rations the State Board of Health shall devour and what scraps shall be left to the ordinary medical doctor who holds membership in the State Society. The report of this committee is now lying on the table awaiting final action by the House of Delegates.

Seriously, the State Board of Health in all of its departments is one of the most valuable assets that North Carolina possesses. I doubt if there is a more efficient board of health in the United States. The benefits of the labors of the State Board of Health should be estimated in the number of lives saved and those whose health has been conserved, rather than the amount in money valuation, which of itself is astonishingly large.

The North Carolina Public Health Association was organized under a different name in 1910 by the health officers and has always been, in a sense, an independent organization. This Association is doing effective work and its influence is increasing yearly. Its Transactions, perched as they are in the back of our annual volume, have already become so voluminous that, cuckoo-like, they are able to crowd the sayings of the little birdlet members of the State Society out of the nest. However, we must give this unit credit for sticking close to the parental trough, even to allowing the State Society to pay for publishing its Transactions.

There are a number of other organizations that emanated from the State Society as truly, if not as directly, as those mentioned. Some of them may be one or two generations removed, but they are branches of the ancestral tree just the same. Among them are the State Hospital Association, the late State Association for the Prevention of Tuberculosis, the Nurses' Examining Board, the State Nurses' Association, *et al.* Time will not allow us to discuss all of them. They have one and all gone off and set up housekeeping on their own hook, and it is fitting that they should have done so, since certain lines of work can be carried out only by independent action. However, I am glad to note that there seems to be a tendency on the part of some of these units to move back home, or at least get closer to the parental roof. A case in point is that of the State Hospital Association. When it got its first pair of pants on it wandered off, but now it has returned and is camping in our front yard, having met on yesterday in this same hotel.

The Eye, Ear, Nose and Throat Section went off and set up as an independent body, but on the invitation of Dr. L. B. McBrayer, President of the State Society in 1915, they came into the fold. This Section is still somewhat inclined to send out investigating committees contrary to the By-Laws made and provided, but I take this to be merely an evidence of their scientific turn of mind. Had the State Society given these specialists proper encouragement, theirs would not have been a run-away marriage.

The railway surgeons in the State deserve our most earnest consideration. Our By-Laws, Chapter 10, Section 1, provide for a Section on Railway Surgery. It seems that this Section functioned for a few years; but, receiving little encouragement, it passed into a state of innoxious somnolency. In the meantime the Railway Surgeons' Association came into existence and occupied the field. However, riding on a free pass has not squelched the yearnings of our surgical friends to come back home. Only the other night Dr. J. V. McGougan, President of that Association, called me over long distance and asked for a place on the program—in fact, begged for recognition. He said: "We have sixty-five railway surgeons in North Carolina, we are a part of the State Society, and we want to be so considered." Brethren, shall we give this fine body of men the cold shoulder and say there is no room in the inn?

For fear you may imagine from what I have said, or may say before the bell rings, that I would convey the impression that the State Medical Society is passing into a state of senility, I hasten to hand you this

bouquet, the aroma of which should be very pleasing to at least some of us. It is that, notwithstanding our shortsightedness in certain instances, we have the consolation of knowing that we are still in reproductive period. Hence there are other children knocking at our door asking for bread. Shall we give them a stone? Nay, Pauline, but let us open the door, invite them in and at least see whom they favor.

The first one to enter is the proposed new Section on Hospitals, with Dr. L. A. Crowell as Chairman. The North Carolina State Hospital Association is composed of a splendid body of men and women and embraces a large number of the best hospitals in the State. It is doing fine work. But do you know why it was ever organized? Primarily because our State Medical Society was asleep and did not realize the nation-wide interest that has developed in hospitals. For us longer to neglect so important a part of our professional work would be unpardonable. The Section on Hospitals is not a protest against the State Hospital Association, but it is an anchor cast to windward to bind that vigorous offspring of ours to the parent-body with hooks of steel.

The next to enter is a boy, and he has on uniform. He represents the medical officers who served in the World War. They are those whom we cheered to the echo when they left their work, their homes, their loved ones, their all, and threw themselves into the maelstrom of the bloodiest war that was ever fought. Without them our armies would soon have become a helpless mob, decimated by wounds and scourged by disease.

"The physician skilled our wounds to heal
Is more than armies to the public weal."

Strange to say, the call for recognition of these hero-veterans comes from without the State. Major D. C. Absher, a loyal son of Carolina, still in the service and now on duty at Knoxville, Tennessee, champions their cause and asks for a place for them at the family table. Here they come with their war records that will never tarnish, but will become more and more luminous and precious as time rolls on. They went forth in the cause of civilization and democracy. Some of them never came back, but for their patriotism paid the price of "greater love hath no man than this, that he lay down his life for another." I would hide my head in shame, did we not run to meet these men, put the robe of our affections about them, the ring of our approval upon their hand, shoes upon their feet, and kill the fatted calf that we may eat and be merry. Hence the establishment of the Section of Medical Veterans and Medical Officers' Reserve Corps, with Lt. Col. Joseph H. Way as Chairman. Brethren, do you approve of this action on our part?

And now I have the pleasing duty to announce the latest addition to our professional family, and it is a girl baby! She was born Sunday morning, March 17, 1923, at Sanatorium. (By the way, an institution and its management of which every North Carolinian should be proud). (Applause.) I drove down from Greensboro to welcome her arrival. She is a lusty youngster with blue eyes, golden hair, and a far-reaching cry that will be heard from Manteo to Murphy. Best of all, she is spon-

sored by Mrs. P. P. McCain, who is her godmother. This insures her proper raising and education. The little lady promises well, and says as soon as she gets out of her swaddling clothes she will take a lively interest in the Medical Society as a whole and every doctor in it as an individual. She proposes to gather together all the doctors' wives and daughters in the State and attend the annual meetings with them. She promises to dance with the boys and jolly the old men. She says she will look after any doctor or his family when they get sick or in trouble. Oh! she is the real thing, and her name is the "Woman's Auxiliary to the Medical Society of the State of North Carolina." Mrs. S. C. Red, President of the Woman's Auxiliary to the American Medical Association, came all the way from Houston, Texas, in order to be present at her christening, which will take place in this hotel Wednesday morning at ten o'clock. If you want to see a good-looking baby, I advise you to be there. Furthermore, she says that the only thing that she asks in return for her activities in our behalf is for the Society to acknowledge her paternity and give her its approval by resolution in the House of Delegates. Men of the Medical Society of the State of North Carolina, will you claim this child?

Besides the above-mentioned "domestic" organizations, to use a legal term, there are certain "foreign" societies that concern us very materially. The principal ones are: The American Medical Association, the Southern Medical Association, the Tri-State Medical Association, the American College of Surgeons, the Southern Surgical Association, the American Society for the Control of Cancer, the American Red Cross, the National Tuberculosis Association, and the United States Veterans' Bureau. There are other national bodies, of course, but they do not affect the professional work in the State so directly as do those mentioned.

Some of these organizations are altruistic in the extreme; others have their own interests to serve. Far be it from me to criticize any body of professional men on this occasion, but even the American Medical Association, of which our State Society is a component part, with all the enormous good it has unquestionably done and will continue to do, is not free from the spirit of aggrandizement. It is now proposing to divide the United States into districts, one of the arguments advanced being that to centralize the printing at the Chicago office will save expense. Dr. Hubert Work, President of the American Medical Association, says that the organization of medical societies designated by valleys, numbers of states, or other distinguishing and limiting titles is evidence of the necessity for the district plan. The Southern Medical Association is resisting this movement with all its strength, knowing full well that it would sound its death knell. I feel that we should likewise be chary of the proposition and so instruct our Delegates.

We are all familiar with the origin, purposes and scope of the Tri-State Medical Association. It is a splendid body of professional men and certainly gives us the opportunity of hearing much of the fine work that is being done by the specalists, hospitals and medical schools in our neighboring States, as well as to tell them of our own experiences. By

the way, I am wondering in what district Dr.-Postmaster General-Secretary of the Interior Work will put the Tri-State. As for me, I say long may the Tri-State live as a separate unit!

The Southern Surgical Association is purely a scientific body. As Zeb Vance said about a certain church, "It does not meddle with either politics or religion." It touches the high-water mark of American surgery and is the goal of every ambitious surgeon throughout the entire country. The South rejoices in the Southern Surgical!

The American College of Surgeons is an altruistic organization that comes into our State with the purpose of elevating the standard of surgeons, surgery and hospitals. It sets its face like a stone wall against fee-splitting and other unethical practices. It brings to us much that is beneficial; it asks nothing in return except that we conform to the standards set for the profession and hospitals throughout America. It has a fellowship of over six thousand, only seventy of whom are North Carolinians. Thus you see our State is not adequately represented in the American College of Surgeons. We should have at least two or three hundred fellows. I am so fully persuaded of the enormous good that the American College of Surgeons is bringing to the profession in North Carolina that of my own initiative and with the co-operation of a large number of the Fellows of the College we organized on last evening a Candidate School for Fellowship in the American College of Surgeons. The purpose of this Society is briefly to train physicians, the younger men especially, for fellowship in the College.

The American Society for the Control of Cancer, dealing as it does with a disease that destroys a life in the United States every six minutes day and night, year in and year out, certainly deserves our most earnest co-operation.

The United States Veterans' Bureau was instituted for the commendable purpose of serving our disabled veterans. It is doing a patriotic work and in the main with wonderful efficiency. But a department of public administration that is so huge, consuming as it does $10.00 out of every $73.00 of the many millions that are collected by the Federal Government from income taxes, unavoidably develops cases of miscarriage of justice. The medical profession can be of incalculable service here; first, by holding up the hands of those in authority; and, second, by supporting the American Legion in its contention that full justice be done to every disabled American soldier. No one knows better than does the physician what the crippled, war-worn, gassed, shell-shocked, tuberculosis, out-of-a-job veteran-soldier needs. To him we owe a debt that can never be fully repaid.

There are yet many other more remotely removed organizations that might be profited by the kindly advice of the physician. True, many of them are already in affiliation with medical men, but a well-thought-out liaison with the purpose of guiding such of their activities as affect the health of the community could not fail to produce good results.

Among them are the following: State Department of Education, colleges and high schools, State Board of Charities and Public Welfare, North Carolina Federation of Woman's Clubs, Parent-Teacher Associations, State Pharmaceutical Association, the North Carolina Dental Association, North Carolina Conference for Social Service, men's business clubs and fraternal organizations (as, for example, Kiwanians, Rotarians, Masons, Knights of Columbus, Odd Fellows, Knights of Pythias), State Federation of Labor, Citizens' Committee of One Hundred, and the American Legion.

All of these organizations, both domestic and foreign, those nearby and those remotely removed, have a bearing upon the medical profession from one standpoint or another. By the same token, we, representing as we do the oldest and the most important medical organization in the State, should recognize our responsibilities to them. While our relations with some of them are as vital as the band that held the Siamese twins together, this is not true of all. Our policy should be to offer to them the hand of fellowship and co-opertion.

Brethren, there is so much to be done; see, the field is white unto the harvest! Here's the State Board of Health dreaming and planning of greater things to come, and beseeching the State Society to join hands with it in the development and realization of its ideals. Can we afford to block the game?

Then there is the American College of Surgeons, the State Nurses' Association and the State Hospital Association, all striving vigorously to standardize the hospitals and training schools for nurses throughout the State. Shall we look on the struggle with indifference and excuse ourselves from taking part in this progressive movement, because, forsooth, our Constitution and By-Laws do not say anything about hospitals and nurses?

I wonder how many of us have felt the urgent necessiay of a State-owned medical journal that will go to every member each month in the year, thereby keeping him in touch with the momentous questions we have been discussing, as well as others both in the State and elsewhere?

One more illustration, if you please; namely, the proposed four-year medical school for North Carolina. You are asking: Will it come and where? For an answer to the latter part of your question I refer you to my friend, Dr. I. W. Faison, Chairman of the Committee of Thirty which your President appointed at the request of Dr. H. W. Chase, President of the State University, to consider the establishment of a medical college. Dr. Chase expressed sincere appreciation for the services of this committee. In answer to the first part of your inquiry I have in my pocket letters from certain men who, of all in the State, are most vitally interested in medical education, and they agree in saying: "It shall be done."

In calling your attention to these matters, oh! men and women of the Medical Society of the State of North Carolina, I beg of you to hear the Macedonian cry; sit up, I pray you, and take notice, wipe the

cobwebs of indifference from your eyes and see what is going on about you. Don't you feel the momentum of these great movements? Don't you hear the tramp of the oncoming host? Don't you feel the kick of the stalwart young men in our midst who are treading upon our heels? These men were educated in up-to-date colleges and trained in modern hospitals. They are eager to try their lances upon the foe of disease and do not hesitate to tackle the last enemy called death, for already they have cheated him of his victim a thousand times! Have we not the wisdom, the discriminating judgment, the vision to plan a campaign that will provide fields of activity for the energies, the ambitions, the development of these young and middle-aged men? Then and not till then will North Carolina take first rank in the galaxy of states!

I have given you a rather sketchy, therefore an imperfect, review of the relations of the various medical, surgical, health, hospital and nursing units in North Carolina. I have discussed this question with you for the twofold purpose of directing your attention to the wonderful possibilities that lie before the profession today and to urge with all the force that I possess that we federate all these various interests for the common good. I am not suggesting for a moment that they all unite under a common charter with the Medical Society of the State of North Carolina. I also realize that the mere suggestion of anything that smacks of a "League of Nations" will cause some of the political ones to go up in the air and roar mightily. But hear me, fellow citizens, the situation that confronts us demands that we be up and doing, and I believe it can be done best by the co-operation of all the interests concerned. Shall we sit supinely by, refusing to be moved by the call of the dead and dying, till some Lord Cecil reproves us for our selfish indifference?

It is passing strange that we have not already gotten together under one flag and federated our interests for the sake of the cause we serve. That it can be done goes without question. Every nearby organization embraced in this discussion is bound together by blood relationship, while some of them are united by legal ties, as, for instance, the Board of Medical Examiners and the State Board of Health are connected with the State Medical Society as prescribed by the statutes of the State. To them we might also add the Nurses' Board of Examiners.

My distinguished predecessor of last year harked back to the amended Constitution of 1903, which says that "the purpose of this Society shall be to federate and bring into one compact organization the entire medical profession of the State." That's fine, but I would go a step further and federate every medical organization in the State, to the end that the purpose of this Society shall be exemplified in one great living, throbbing, working, compact federation whose benefits shall be enjoyed by every citizen in every nook and corner of this grand old State!

It is not for me to tell you how this may best be done. I have neither the wisdom nor the presumption. That is a question which the Constitution delegates to the House of Delegates, which is your representative body, to do your bidding. I am content to visualize for you

the necessities of the case and to trust to your own superior judgment to determine what action shall be taken.

Hawthorne said that people that had lighted on a new thought, or a thought that they fancied new, came to Emerson as the finder of a glittering gem hastens to a lapidary to ascertain its quality and value. Hence in the discharge of my official duties I come to you in all confidence with this message, the kernel of which is by no means new but is as old as the brotherhood of man, for your approval or for your rejection.

While traveling in Europe in 1913 I visited the lapidaries at Amsterdam. I was shown how they cut and polished diamonds. The diamond when first found in the mines is anything but attractive. It is a rough, irregular, lustreless stone imbedded in the debris of untold ages, without any suggestion to the ordinary observer as to its true value. Indeed, one of the largest diamonds of South Africa was used for years as a stone to prop the door of a native's hut, and the children played with it.

As I watched the expert working upon the rough stone I saw its beauty gradually stand forth. The workman added nothing to the diamond; rather he took something from it. The various processes through which the stone was passed simply uncovered those qualities that all the while lay hidden in its depths. When he handed the finished product to me, I marveled as much because of its changed appearance as at its beauty. My eyes feasted upon the priceless gem. In its glistening facets I caught the light of a woman's smile; I saw that for which heroes had sacrificed their lives; I visioned the soldier's ambition and the poet's dream; I caught the iridescent rays that shone from the eye of the idol made luminous by the great Orloff stone, later to become the central figure in the tiara of the Empress Catherine. As I turned it toward the light I recognized the reflection of the primal colors of the rainbow, blending with their ever-changing kaleidoscopic combinations, till the precious stone held in my fiingers seemed to be the very embodiment of all that was pure and true and beautiful. And I exclaimed: "How wonderful that the lustreless stone at the Kifir's cabin door should become the most beautiful thing in all the world!"

The beauty of the diamond may aptly be compared to the possibilities inherent in the mind of man when transformed into thought and the thought crystallized into action by the lapidary of human experience; provided, always, that the thinking and the doing are animated by the heavenly sense of service to one's fellow man. Service to humanity has no limitations either as to time or results. A correct principle practically applied goes on with an ever-widening sphere of influence as long as time shall last.

"A diamond in the rough is a diamond sure enough,
Before it's ever found it's made of diamond stuff.
If it is ever found, some one must find it;
If it is ever ground, some one must grind it.
But when it's found and when it's ground
And when it's burnished bright
It keeps on everlastingly
Throwing out its light."

Dr. Chas. O'H. Laughinghouse, Greenville:

Mr. Chairman: The Constitution and By-Laws of the Medical Society of the State of North Carolina have a formal way of disposing of the President's address by directing it to the House of Delegates for its analysis, as well as its recommendation. But for this system of disposition I would make a motion that the Society elect a committee to report back findings in the way of recommendations. The address, illuminated as it is by the light of the past, influenced as it is by conditions of the present, is not only splendid but most timely. It is saturated with plans which, if carried to completion, will most beneficently influence the future of medicine in this good State. Because of the meat there is in it, because of its diction, its enthusiastic style of deliverance, and, above all, because it contains ideas and plans which can come from none other than the mind of a man familiar with medicine and with the needs of the people, I am asking that this Society express its appreciation of the address by a rising vote.

Dr. Long:

I can only say, with the Japs, "I am sorry, gentlemen, that I did not do better."

Dr. L. B. McBrayer, Secretary:

I want to move you, sir, that this splendid address, that points the way to greater and greater things for the medical profession in North Carolina, be referred to the House of Delegates. It seems that that is the only logical place to which a paper containing so many important things, and so many things that need to be worked out, could properly be referred.

Motion seconded and carried.

After announcements by the Chairman of the Committee on Arrangements and the Secretary-Treasurer, the opening session adjourned.

TUESDAY, APRIL 17

THE COUNCIL AND THE DISTRICT SOCIETY*

EUGENE B. GLENN, M.D., Asheville, Councilor Tenth District

The Constitution for the Medical Society of the State of North Carolina, Article VIII, Sections 1 and 2, is as follows:

Section 1. The officers of this Society shall be a President, three Vice-Presidents, a Secretary-Treasurer, and ten Councilors.

Section 2. The President and Vice-Presidents shall be elected for a term of one year. The Secretary-Treasurer and Councilors shall be elected for terms of three years each. All of these officers shall serve until their successors are elected and installed.

In the By-Laws prepared to accompany the Constitution composed by the Committee on Organization, the duties of the Council of the State Medical Societies were outlined in Chapter VIII and are as follows:

Section 1. The Council shall hold daily meetings during the annual session of the Society and at such other times as necessity may require, subject to the call of the Chairman or on petition of three Councilors. It shall meet on the last day of the annual session of the Society for reorganization and for the outlining of work for the ensuing year. At this meeting it shall elect a Chairman and Secretary, and it shall keep a permanent record of its proceedings. It shall, through its Chairman, make an annual report to the House of Delegates at such time as may be provided.

Section 2. Each Councilor shall be organizer, peace-maker and censor for his district. He shall visit each county in his district at least once a year for the purpose of organizing component societies where none exist, for inquiring in to the condition of the profession, and for improving and increasing the zeal of the county societies and their members. He shall make an annual report of his doings, and of the condition of the profession of each county in his district, to each annual session of the House of Delegates. The necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed may be allowed by the House of Delegates upon a proper itemized statement, but this shall not be construed to include his expense in attending the annual session of the Society.

Section 3. Collectively the Council shall be the Board of Censors of the Society. It shall consider all questions involving the rights and standing of members, whether in relation to other members, to the component societies, or to this Society. All questions of an ethical nature brought before the House of Delegates or the general meeting shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or of a county society, upon which an appeal is taken from the decision of an individual Councilor. Its decision in all such cases shall be final.

*Presented at the dinner meeting.

Section 4. The Council shall have the right to communicate the views of the profession and of the Society in regard to health, sanitation and other important matters to the public and lay press. Such communications shall be officially signed by the Chairman and Secretary of the Council, as such.

It is evident that the Constitution and By-Laws prepared by the Committee intended to make the Council the chief instrument for (1) Stimulating the interest and zeal of members and societies, and between component societies; (2) Deciding questions at issue between individual members, between members and societies, and between component societies; (3) Effecting and maintaining organization; (4) Safeguarding the interest of the profession by securing observance of the principles of medical ethics; (5) Protecting the rights and privileges of individual members and of the individual society; (6) Composing all differences by conciliation or compromise when possible; (7) Promoting a proper relationship between the medical profession and the public as regards health and sanitation.

As to the subject of publicity, it might be well to suggest to our House of Delegates that they form a plan for organizing health councils, where such organizations would be effective, and proceed to perfect these organizations, maintaining such a character of jurisdiction as would insure the stability of the organization and propriety and authenticity in the publication of scientific articles for the education of the public.

Our aim at the present time should be to get in closer touch with the people of the State. As a profession, to a certain extent we have been disregarding community welfare and the people whom we are supposed to meet. It should be our endeavor to get in closer touch with the community and with our community work, and everything that we do in North Carolina should have the stamp of the Medical Society of the State and be brought before the public in the proper light.

The Council is the logical body which should be looked to for advice and action in the interim between meetings, and the Councilors should be told definitely their duties and then should be encouraged to attend to them, so that the profession could function from day to day and have some regularly established body to whom it could look for action. The public is not being directed in the right way. The voice of the majority of the profession is not heard before woman's clubs, chambers of commerce, civic organizations and boards of trade. We are actively represented by a small majority, some of whom are trying to impress on these people ideas unanimously disapproved of by the American Medical Association. I believe the women, if properly guided along these lines, will be the greatest asset the medical profession can have, but up to the present time they have not been properly directed.

If you have a good, live Secretary, you are likely to have a live Council. On the other hand, if the Secretary is looking for the Council to divide the responsibility, the Council is likely to be disappointing. Our own Secretary is efficient and we have a good Council for that reason. The Councilors and Secretary of the State Society should not

be held wholly responsible for all the work of their districts, for it should be the duty of the President of the State Society to assume leadership in the work of organized medicine in the State. It is with pride that I can point to the fact that our last President, Dr. Hubert A. Royster, and our present President, Dr. John Wesley Long, visited practically every district society during their encumbencies. Our very able and efficient Secretary, Dr. L. B. McBrayer, visited many district meetings and added great stimulus to our district societies.

With an efficient working council and a good State President and Secretary, the district society can be made a good society, good working officers each stimulating the other and each helping the other.

Permit me to quote Dr. Frank Billings, of Chicago, as follows:

"Organized medicine includes in all of its branches the administrative offices, the various committees or councils, the legislative body and the House of Delegates, and, in the State organization, the District Councilors. An organized body may be compared with a chain which is as strong as the weakest link in it. Organized medicine is weak or strong, depending on the efficiency of each of its officers. Therefore, officers in organized medicine should be chosen because of character and ability; and each man chosen should accept the office with the understanding that it carries with it responsibility and service, as well as honor.

We must promote a proper relationship between the medical profession and the public, and institute methods which will improve the economic status of its members and fellows. The Councilors represent the fifth wheel of the vehicle of organized medicine. Each Councilor has duties, well defined by the constitution and by-laws, which he should attempt to fulfil if he accepts the office with its responsibilities.

In the problem of organization of the medical profession, difficulties are met with in sparsely settled communities because of the small number of the profession in rural districts. Long distances must be traveled by members to attend meetings, and the Councilors of large districts find it difficult and often impossible to keep in personal touch with the component societies of their districts. Qualities of leadership and requisite zeal will make up for these embarrassments.

From what I have said it may be inferred that the Councilor will not perform his whole duty to the members of the profession in his district unless he promotes professional advancement along the lines indicated, unless he makes clear the relationship between the profession and the public, and unless he promotes the ways and means for the economic improvement of the members of the component societies of his district. It is feasible to develop diagnostic clinics in districts; to make available to members a better medical literature, and to promote diagnostic laboratories and district libraries for the use of the profession. The public can be educated and can be organized to co-operate with the medical profession as is already done in the promotion of public welfare, instead of permitting lay organizations, such as the Red Cross, to usurp the functions of the profession.

TUESDAY, APRIL 17, 8:00 P. M.

Dr. J. W. Long, President:

The special object of this meeting is twofold: First, to do honor to our Honorary Fellows, the men who have borne the burden and heat of the day for thirty years and more; and, second, to honor our past Presidents. We are especially favored in having one of these old veterans, a man whom you all know and admire, address us on this occasion. I present Dr. Cyrus Thompson.

ADDRESS IN HONOR OF PAST PRESIDENTS AND HONORARY FELLOWS

Cyrus Thompson, M.D., Jacksonville

I can not resent, at my time of life, the President's reference to me as not only a veteran, but an old veteran. I am growing older "day by day, in every way," and I am now becoming one of the patriarchs and fathers in our medical Israel.

The President says that this occasion is in honor of the Fellows. I would like to run on in a light vein, but when I look at my own gray hairs, and at yours, it draws me rather to sadness and to solemnity. This business of living is a terrible thing. That phrase which you have all heard, "The quick and the dead," is a terrible phrase. You can look in the face of the dead and say, "He giveth His beloved sleep," and you can say that he that has suffered does not suffer now, because God is letting him rest from his labors; but the quick are the sensitive and tender, those that live on and have grief and sorrow.

Through all my life nothing has so much appalled me as the separateness of things, the singleness of things. In the days when I used to drive a horse and would get in my buggy and ride out in the night, I would see a great star shining gloriously yonder, fiery red, or paler, or green-tinted. Great to me in magnitude it might be, but it stood off there as lonely and separate as I. It came in contact with nothing. It came in contact with no other body. It moved my pity. And so, Mr. President, "We live and move and have our being," and always "The heart knoweth his own bitterness, and a stranger intermeddleth not with a man's joy." Is not this loneliness appalling? Sometimes I have thought, as in our faith there is but one God, Jehovah, that He, absolutely by Himself, knows our sense of loneliness. And perhaps God loves companionship and reaches down toward us therefore with His love and care.

When we gather together on occasions like this, then life is the more worth living, because it is an expression of love in a sense of nearness, and nothing is everlasting and blessed but love. I heard my friend, Montgomery, from Mecklenburg, and I said, "Montgomery, you made a good speech;" because all through it and crowning it was the sentiment of love among the medical men in Mecklenburg. It is a wonderful thing, this love among men. In the Medical Society of North Carolina younger men have love for the older men and do them honor. One

hundred and fifty-seven men who have kept their membership for thirty years we have had on our roster, and forty-seven, I believe have dropped out. They were working on and all at once something said "Halt!" and they stopped in the line of march. They had finished their labors and are now at rest. It is a thin gray line that is left. Of all the Presidents that this Society has had, two-thirds are gone, and these that are here are growing older and older and older. I look at my friend Faison, who came from Duplin, down near me. He is growing older. He looks at me and says I am growing older also. Soon some one will look for us, and we shall not be here; we, too, shall be gone. That is sad, is it not, wonderfully sad? Let's not dwell upon it.

Who are the individuals that have made the Medical Society of the State of North Carolina? It is the Fellows of the North Carolina Society that have made it. I like to consider their work, and the generations that come after us will like to consider their work. These men have made history. I was impressed this morning, when the President was delivering his beautiful address, and was speaking of the history of this Society, and the work of the Fellows of it, and was telling about the Transactions, and about his perfect set of the Transactions. It occurred to me then to say, in the language of the old Scriptures, "Are not their acts written" in the Transactions of the Medical Society of the State of North Carolina? That is one of the glories of this Society, that whatever was written in the history of medicine worthy the consideration of the medical historian or man is not lost, but is preserved in various places in North Carolina, written in the archives; and it forms a history of medicine, of medical men and of our work for the welfare of the people of North Carolina. If I should want to know who has done this work, I have but to consult the Transactions of this Society, and there it may be found. If you want to know who gave a history of the growth of hospitals in North Carolina, for instance, you have it embalmed in a lasting volume of Transactions, cared for in the public and private libraries of North Carolina.

There is an old Latin proverb, *"Tempora mutantur, et nos mutamur in illis"*—"The times are changed, and we are changed in them." If the men who made the Medical Society of North Carolina and are gone could look down from their abode and see what we are doing here now, and the information could be given them that this is the Medical Society of the State of North Carolina, immediately they would say: "What, that? It cannot be, because it is so wholly different from what it was when we belonged to the Medical Society of the State of North Carolina." Oh, yes, it is different, because the times have changed, and we have changed in the times. In other words, it would be but an exemplification of that, to me, great scientific doctrine, that a man, after all, is but the equation of his environment. Our environment has changed. So the United States of America is as much the United States of America as it was seventy-five years ago, and yet what is there in life that was here seventy-five years ago? And what could the men of that day do with the America of today? The Medical Society is the same as it was sixty years ago, but where is there a man now living who was a member sixty years ago? Yet it is the same in character and purpose.

And that is one of the strange things in this world, that a government or a society, nay, a man, can change its component elements and yet retain its identity. Great Britain is the same as it was five hundred years ago, and yet the people are different. The government is different. I am not the same as I was twenty or twenty-five years ago, yet I carry the same name and I preserve all the social and property rights that ever were mine.

May I make an appeal right here? As we that are older have made this Society more than it was twenty years ago, as we have made it more than it was forty years ago, as the men that have passed out made it more than it was sixty years ago, it is incumbent upon the younger blood in the Society, as the old fellows are turning gray and becoming weak of knee and are hearing the command one by one to fall out of line, it is incumbent upon you, young men, to make the Society in North Carolina greater year by year, every year and in every way. And I know you will.

You ask me if I love the Society, and why I do. I love it, for one reason, because it has been wonderfully kind to me. I love it because it is composed of the very cream of the population in North Carolina. I love it because it is made up of those who love their fellow-man. Somehow or other I have never made any money, and I would not if I lived here a century, but I have never lacked for anything, and I have been immensely proud that I have been all these years a practitioner of medicine; and whenever I have met a lawyer I have always felt that somehow, by the grace of God, I was a little better than he. My motive was better. No man who would write the history of North Carolina but would say that the men who have given the spirit of humanity and of progress are the doctors, though they have not written the laws. It is so now, and it has always been so, whether in town or in country, that if a doctor is worthy the name of doctor he is a leading man in his community in every high and lofty and progressive purpose. And so, Mr. President, I honor these old fellows for what they are and for what they have done. I honor them immensely, and so do we all.

I reckon that is enough of the solemn sort of thing. Just as many of you as are willing, wink your eye at me and look pleasant if I say, "Let's take a smile."

I want to read you a little bit of verse about the way they used to do things somewhere, and the way these good old fellows never did. I came across, some time ago, a bit of verse written by a Virginian who was sometime a student at the University of Virginia. I know none of these old fellows were ever men like this, for if they had been, there would not have been any Medical Society of North Carolina, nor anything anywhere else worth mentioning.

BLOWING IT IN

When I were a stugent recentlee,
Nothing wasn't good enough for me:
I wore four shoes and a dozen 'ats,
And my tooth-picks they were base-ball bats,

For a watch I wore the Rotunda clock,
And forty-nine pearls in every sock;
So many gems and jewels clung
To my left 'and that it 'elpless 'ung,
And as for diamonds, sakes alive,
I throwed away four 'cause they weren't five!
Absolutelee,
We were that careless, wild and free,
When I were a stugent recentlee!

When I were a stugent recentlee,
Dinner was breakfast-time to me;
I went to bed at 'alf past two,
And riz when lectures all were through.
I 'ad to 'ave me a black valet—
One by night and one by day,
The one by night 'e work like 'ell,
Pulling the corks from the bright Moselle;
And the one by day 'e work like 'ell, Sir,
Pulling the corks from the Bromo seltzer.
Absolutelee,
We were that careless, wild and free,
When I were a stugent recentlee!

When I were a stugent recentlee,
My room-mate were a match for me:
'Is dad were boss of the C. & O.,
And we 'ad a private train or so,
And wore as thin as a rail the track
From 'ome to Washington and back.
We 'ired a nigger when we went down,
To tote the suit-case through the town;
But when we came back, the weight was such,
For one poor coon it was too much.
Absolutelee,
We were that careless, wild and free,
When I were a stugent recentlee!

When I were a stugent recentlee,
I took six tickets and flunked but three:
Which might 'ave 'elped in my degree,
If I 'adn't, like a fool, dropped the other three!
Unlucky I was, but a frien' o' mine
'Ad even worse luck, for 'e took nine,
Was only requested to leave off one.
He studied 'ard and it might 'ave done,
If 'e 'adn't gone and forgot the date
And missed the exams on the other darned eight!
Absolutelee,
That's why so few got a Ph.D.,
When I were a stugent recentlee!

—*W. S. F., University of Va.*

That is not North Carolina poetry; that is Virginia poetry. For Virginia stuff, it does very well. And now I am going to say this, that nobody except a Virginian expects any Virginia thing to be as good as a North Carolina thing.

Let us talk a little bit more, while we are talking offhand. Or I may read some more verse. You know North Carolina never has cut any great figure, Mr. House, in literature, and yet North Carolina has had genuine poets. In the east, Mr. President, if I may digress and be personal (being so far now in the western part of North Carolina) there are two genuine poets. I am one of them, and my friend Judge Grady, of the Superior Court bench, is the other. Nobody has known it but ourselves, but we were so thoroughly satisfied of it that we did not care whether anybody else knew it or not. I talked a little bit, a while ago, about death, because I know it will not be long before I shall hear the command, "Halt! Drop out of the line!" And some of you will hear it, also. It does not bother me much, for if I live right I am going to die right, and if I die right, what can go wrong with me after that? What, indeed? I have that kind of faith. "The just shall live by faith;" and you can not please God unless you have faith, and you can please Him if you have it.

Now, my friend Judge Grady and I some time ago were talking about evolution. We do not know whether we came up from the monkey and beyond, or whether we came from an original pair made a little lower than the angels, "and getting lower ever since." We do not know whether we shall go to Heaven and play upon golden harps and walk along the good roads, or what not. We shall fill our place in the scheme of things. We hope we shall fill it well. Let me read you Grady's "Immortality".

IMMORTALITY

Some day the thing that we call Life—
  The thing that thinks in you and me—
Will moult this frame of toil and strife,
  And put on Immortality.

If sense there be and future life—
  Such life as predicates a Soul—
Still can I see through endless strife
  A scheme divine with worthy goal.

For such a scheme to you and me,
  Would set all human doubts at naught;
Our manumitted souls would flee
  Beyond the utmost bounds of thought,

To seek Capella's bright abode,
  To run the white Galactic Race,
Or tramp down Herschel's cosmic road,
  And search the treasured vaults of space.

Far past Orion's jeweled blade,
  Some astral pathway we shall choose,
Where stellar walks and streams are laid,
  'Twixt Fomalhaut and Betelgeuse;

To sport with Halley's radiant child,
  To guard Donati's wandering track,
Or follow Phoebus whirling wild,
  His course about the zodiac.

Mad with a fierce and trembling joy,
  We'll read God's riddles one by one;
For neither time nor space can cloy
  The quest of Truth beyond the sun.

But if I lie in dreamless sleep,
And mix forever with the clod,
Still shall the ages prove and keep
  The primal law ordained of God.

For when these festering atoms turn
  To elemental dust and clay
Will countless fibrils seek the urn,
  Where I'm embalmed and laid away?

The stately oak will steal my strength,
  The red rose drink the blood of me,
And pink and pansy come at length,
  To set my sweetest fancies free.

The ivy vine will prove my love,
  The pitying pine my griefs reveal,
While adoration deep will move
  The petals of the Marechal Niel.

The passions that I long subdued,
  Will blush thru' crimson poppy cells,
And faith sublime will rest imbued
  In the white hearts of immortelles.

Remembrance, God's immortal gift,
  And folly with its children blind,
From the dark tomb their voice will lift
  In rosemary and columbine.

And thus, thru Nature's primal force,
  Will ultra beam or chemic ray
Preserve and purify the corpse
  That strolls upon the streets today.

And whether death comes soon or late,
  It matters not to you and me;
For we shall rise from either fate,
  And put on IMMORTALITY.

—*Henry Alexander Grady,*
Clinton, N. C.

Now, that is North Carolina stuff, and it shows you what a North Carolina man can do. I am just giving you a sample of North Carolina poetry. I would give you some of mine, but you know, since I have passed sixty, my muse is growing a little bit lazy, whereas she once was as sprightly as a flapper.

I may give you another little bit of verse later. I am always thinking about the art of living, for I think the art of living is the finest of the fine arts. There is nothing more pitiful to me than a man born in a beautiful world like this, in a land where there is so much human kindness as there is in this land of ours who, when you go and ask him how he feels, says, "Not so well." I never have had much patience with that kind of man, who says that had he been with Noah in the ark, both the fleas would surely have fed on him. I have not much patience with the man who has a gastralgia in his cranium and who says that the world has not treated him right. It is a wonderfully good world to live in, but there is only one way to live in it, and that is to love it. There was a minor poet in my county who once said something like this:

"The burden of being, O love, is not death,
The burden of being is living;
But there's joy in living with love in each breath,
The having of love and the giving."

I have run my sixty-eight years and am going on in my sixty-ninth year, light of heart, happy of soul, thinking nothing about dying, but all the time about living, because this little bit of philosophy has gone with me day by day and night after night these blessed years. Whom, Mr. President, do you consider the greatest name in medicine in the United States, and afterward in the British Empire? It was Sir William Osler. What was the charm of Sir William Osler? I dare say there were men who had more knowledge of medicine, the practice of it, than Osler, because it was said of him that he did nothing but diagnose, and so far as his treatment was concerned, it was summed up in "hope and nux vomica." But in America there was not a man who could measure up to the shoulder of Osler, nor in Britain. When he spoke at a farewell dinner in New York in 1905, just before he left to become Regius Professor of Medicine at Oxford, here is what he said: "I have had three personal ideals. One, to do the day's work well and not bother about tomorrow." In other words, he was exemplifying that statement of the Scripture, "Sufficient unto the day is the evil thereof." (It might have been put in the Scripture also that sufficient unto the day is the joy thereof). He went on: "To this more than to anything else I owe whatever of success I have had. The second ideal has been to enact the Golden Rule, so far as in me lay, toward my professional brethren and toward the patients committed to my care. And the third has been to cultivate such measure of equanimity as would enable me to bear success with humility, the affection of my friends without pride, and to be ready when the day of sorrow and grief comes to meet it with the courage befitting a man. 'I have loved no darkness, have sophisticated no truth, nursed no delusion, allowed no fear.' "

Now, Mr. President and gentlemen, I am almost through. I shall be through directly.

Faison, would you not like to be a boy again? I believe it was Edgar Guest who wrote this verse. There is not much poetry in it.

I'd like to be a boy again,
A care-free prince of joy again.
I'd like to tread the hills and dales
The way I used to do.
I'd like the tattered shirt again,
The breeches thick with mud again,
The ugly, dirty feet again,
That long ago I knew.

I'd like to play first base again,
And Sliver's curves to face again,
I'd like to climb, the way I did,
A friendly apple tree.
For, knowing what I do today,
Could I but wander back and play,
I'd get full measure of the joy
That boyhood gave to me.

I'd like to be a lad again,
A youngster, wild and glad again,
I'd like to sleep and eat again
The way I used to do.
I'd like to race and run again,
And drain from life its fun again,
And start another round of joy
The moment one was through.

But care and strife have come to me,
And often days are gloom to me,
And sleep is not the thing it was,
And food is not the same.
And I have sighed and known that I
Must journey on and sigh again,
And I have stood at envy's point,
And heard the voice of shame.

I've learned that joys are fleeting things,
That parting pain each meeting brings,
And gain and loss are partners here,
And so are smiles and tears;
That only boys from day to day
Can drain and fill the cup of play;
That age must mourn for what is lost,
Throughout the coming years.

But boys cannot appreciate
Their priceless joy until too late,

And those who own the charms I had,
Will soon be changed to men;
And then they, too, will sit as I,
And backward turn to look and sigh,
And share my longings all in vain—
To be a care-free boy again.

That is all right, but I have not that spirit of regret. The way has been pleasant enough and I wouldn't mind going it again. But I am having a better time now than when I was a boy.

There was another North Carolina poet who wrote this, and with this, Mr. President, I shall close. I am trying to give you a little philosophy of life, and tell you how not to stumble as you climb the upward way.

Let me grow old
With heart e'er fresh and young;
A splender still of youth's first splendid gold,
With ne'er a whit of love's warm kiss grown cold
Nor e'er a bit of life's sweet song unsung.

Let me grow old
With softer music yet,
My life a story, told and told and told,
With something still more wondrous to unfold
Ere I forget.

Let me grow old
As ripes the yellowed wheat;
For youth has been so bonny, brave and bold,
Fain would I wrap its jewels fold on fold ,
And lay them untarnished at the conqueror's feet.

I thank you.

Dr. Long, President:

The principal address on surgery during this meeting of the State Medical Society will be delivered by a man who is not only recognized throughout this country and abroad as an authority upon the subject of which he will speak, but, as you know, he comes from the largest clinic of its kind in the world, a clinic of which every American may be proud. Not only does the speaker represent what I have stated, but, best of all, he is a native North Carolinian. I have the pleasure of introducing to you Dr. John de J. Pemberton, from Fayetteville, North Carolina, more recently from Rochester, Minnesota, who will now address you.

Dr. Pemberton:

I would like to introduce my remarks by saying that I have known Dr. Long for about ten years, and I know of no man who is more courteous and more hospitable than Dr. Long. Knowing this, I hope that you will make due allowance for all the nice things he said about me.

SURGICAL TREATMENT IN DISEASES OF THE THYROID GLAND

John de J. Pemberton, M.D.

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In recent years there has been great improvement in the immediate and end results of surgery of the thyroid gland. During the year 1922 there were in the Mayo Clinic 1,983 operations on 1,497 patients with goiter. Nineteen patients died, a mortality by operation of 0.95 per cent, and by case of 1.2 per cent. In the earlier days of surgery of the thyroid, the relatively high mortality rate was an influential factor in the decision of many patients with goiter to seek means of cure other than surgery. Many of these patients finally came to surgery late in the course of the disease, when the operative risk was increased and when the prospect for complete cure was greatly diminished. In this way a small vicious circle was created. The knowledge of the benefits derived from surgery has, however, gradually become more widely disseminated, and today a much larger proportion of patients with goiter seek surgical treatment early in the course of the disease, when the risk is less, and when the prospect for complete cure is greatest. Thus, with the better recognition of, and means of avoiding, the dangers associated with the surgical management, combined with our increased knowledge of the thyroid gland in health and disease, largely the result of the discovery of thyroxin and the practical application of basal metabolism, the immediate and end results of surgery of the thyroid are now comparable with those of any major surgery.

The diseases of the thyroid gland amenable to surgical interference may be grouped, according to Plummer's classification, as follows: (1) diffuse colloid thyroid; (2) adenoma without hyperthyroidism; (3) adenoma with hyperthyroidism; (4) exophthalmic goiter; (5) thyroiditis and (6) malignancy. It is apparent that the results of surgery vary according to the type of goiter involved.

Diffuse colloid goiter—This is the common physiologic enlargement of the thyroid gland seen in adolescence. By the investigations of Marine it has been definitely proved that iodin insufficiency is the important etiologic factor, and that the occurrence of this disease can be avoided by the feeding in adolescence of a small amount of iodin. Diffuse colloid goiter is a symmetrical, diffuse, soft swelling of the gland, due to the distention of the follicles by excessive colloid deposit, and is often associated with greatly increased vascularity as evidenced by marked bruits and thrills in the thyroid arteries. The goiter is unassociated with symptoms other than those incident to the pressure of the growth. When the enlargement develops in the young girl of unstable nervous system, the symptoms are often mistaken for the hyperthyroidism of exophthalmic goiter. In most instances the conditions can be readily diagnosed, but in many others, especially where the neurotic tendencies are well marked, it becomes extremely difficult, by clinical means alone, definitly to differentiate the two diseases. In such cases only by repeated basal metabolic

tests can the diagnosis be accurately made. The basal metabolic rate in the patient with the colloid goiter is normal or slightly subnormal, while that of the patient with exophthalmic goiter is always above normal. Usually the diffuse colloid goiter will disappear spontaneously between the twentieth and thirtieth years, but its complete disappearance can be induced by the administration of iodin or thyroxin. Unless the enlargement of the thyroid is associated with nodular masses (adenomas), or unless the growth attains great dimensions and thus interferes with breathing, by pressing on the trachea, surgery is not indicated. In cases in which operation is advisable, the operative risk is less than one per cent and the end results are good. As a preventive measure against the recurrence of the enlargement, the occasional feeding of small amounts of iodin is sometimes indicated.

Adenoma without hyperthyroidism—Adenomas occur in the thyroid gland either as single or multiple nodular masses, most commonly late in the second, or early in the third decade of life. They are encapsulated nodules composed of new follicles, of either fetal or adult origin, show varying degrees of degeneration, and in early stages are unassociated with hyperthyroidism. Symptoms, when present, are the result of the pressure of the growth upon the surrounding structures, and vary in degree according to the size and location of the tumor. They may attain enormous proportions, and the enlargement may be entirely cervical, or cervical with substernal projection (13.5 per cent), or, in a small proportion of cases, the growth may be entirely concealed within the thoracic cavity.

The symptoms from which the patient seeks relief vary from deformity of the neck to a series of complaints incident to the pressure of the tumor on the neighboring structures. The symptoms resulting from the pressure of a substernal tumor vary according to the structure compressed, and the degree of compression, rather than the size of the tumor. A small adenoma lying just within the narrow thoracic inlet, in front or behind the trachea, may produce marked dyspnea or choking spells, while a huge, completely intrathoracic tumor, owing to the capaciousness of the cavity, may be wholly without pressure symptoms. The structures most frequently affected by pressure of the goiter are the trachea, recurrent laryngeal nerves, and the jugular veins. Manifestations of obstructive breathing, such as rasping breath sounds, coughing, choking and asthmatic attacks, may be continuous, or induced intermittently by sudden muscular exertion, or by flexion or extension of the head, which may cause the tumor to become wedged in the inlet. Dilated veins on the neck and on the chest wall occur in about 10 per cent of all substernal goiters, and paralysis of one or both vocal cords is noted in 10 per cent.

Treatment other than surgery is ineffective in causing the disappearance of the adenomas. As a certain proportion of the patients with adenoma develop hyperthyroidism later (on an average, fourteen years after the appearance of the goiter), surgery is often indicated as a preventive measure, particularly if the patient cannot be under strict medical observation. Moreover, it is apparent that surgery is indicated for cos-

metic reasons, and for the relief of symptoms incident to the pressure of the growth.

The operative risk is less than 0.5 per cent. During the year 1922 there were 663 thyroidectomies on 663 patients with adenomatous goiter with hyperthyroidism, with one death, or a mortality of 0.15 per cent. Successful surgery is followed in nearly 100 per cent of the cases by complete cure. Recurrences are very uncommon, and in nearly every instance may be attributed to the failure to remove all of the adenomatous tissue at the time of the operation.

Adenoma with hyperthyroidism—Plummer has shown that the toxic symptoms associated with adenoma form a definite clinical entity, and must not be confused with those of exophthalmic goiter. He has pointed out that a patient in whom an adenoma of the thyroid gland appears in her twenty-second year has a definite chance of developing symptoms of hyperthyroidism in her thirty-sixth year. The symptoms usually occur spontaneously with insidious onset, and develop gradually but progressively. The symptoms may be induced abruptly by the administration of iodin to the patient with an adenoma without hyperthyroidism. The clinical picture may resemble either the syndrome of cardiovascular disease, or that of true exophthalmic goiter. On account of the insidious onset and mildly progressive course, many of these patients do not realize any great change in their condition until symptoms of marked cardiac irregularity or of decompensation develop. Consequently, owing to the delay in coming to operation, there develop in many of these patients visceral degenerative changes, which add considerably to the operative risk and diminish the prospect for complete cure. The operative mortality is between two and four per cent. The successful removal of the adenomatous tissue is followed in from ten days to two weeks by the complete disappearance of hyperthyroidism. Judd found that after the lapse of two years about 83 per cent of these patients considered themselves cured and another five per cent were markedly improved.

Exophthalmic goiter—As defined by Boothby, exophthalmic goiter is " a constitutional disease apparently due to an excessive, probably an abnormal, secretion of an enlarged thyroid gland showing pathologically diffuse, parenchymateus hypertrophy and hyperplasia. It is characterized by an increased basal metabolic rate with the resulting secondary manifestations, with a peculiar nervous symdrome and usually exophthalmos, with a tendency to gastro-intestinal crises of vomiting and diarrhea." The onset of the disease may be apparently abrupt, and its course may from the beginning be one of overwhelming intensity, terminating fatally in a few months. More often, however, this period of marked severity will be followed by another of partial or complete remission of the symptoms of hyperthyroidism, which may last for months, only to be superseded again and again by waves of varying intensity. In other cases the onset may be gradual and the disease may run a prolonged, mild course with little variation in its intensity. On account of the natural fluctuating course of the disease with the occurrence of the spontaneous remissions of symptoms, it is impossible to evaluate any form of treatment until there has elapsed sufficient time to preclude the probability of recurrence.

While the cause of exophtalmic goiter is unknown, there is always a characteristic pathologic picture of diffuse, parenchymatous hypertrophy and hyperplasia in the thyroid gland. All evidence points to the fact that the thyroid gland is producing an excessive amount of secretion, probably altered or perverted in character, and most of the present day methods of treatment aim to diminish the activity of the gland by reducing its blood and nerve supply, or by partial ablation of the gland, either by operation or radiation. The ultimate object of the surgical treatment of patients with exophthalmic goiter is the removal by resection of the greater part of the gland, a portion sufficient to carry on its normal functions being preserved. In certain stages of the disease the removal of the gland is attended by greater dangers than in others; particular danger is encountered immediately preceding, during, or following a crisis, and in such instances it is advisable to employ preliminary surgical procedures, such as ligations or injections of boiling water into the gland. The improvement in the patients' condition after such preparatory measures and a period of rest is often very great, and formerly, if not urged to return, many patients considered themselves cured and had no further operations. Our records show that some of these patients remained apparently well, but many more had relapses; sometimes, however, not until after several years. Subsequently in the period of development of thyroid surgery all patients with exophthalmic goiter were urged to have a partial thyroidectomy, at first consisting of the resection of one lobe, and later a small portion of the second lobe. A decided improvement in the end results followed this change in the surgical management, but the incidence of recurrences of symptoms, while greatly reduced, was still too high. Today the routine operation for the removal of the goiter is even more radical, consisting in a double resection of the thyroid gland with preservation of the posterior part of each lobe equivalent to from one-sixth to one-third of a normal lobe.

In the past, the relatively high mortality associated with surgery in cases of exophthalmic goiter was, to a large extent, dependent on the fact that a great proportion of the patients did not come to surgery until late in the course of the disease, when factors inherent to the disease had become serious, and visceral degenerative changes had developed. However, our records show that year by year there is a constant tendency for patients with exophthalmic goiter to seek operative measures earlier. Thus, in the series of patients with exophthalmic goiter in 1909, the average duration of the symptoms of hyperthyroidism before operation was thirty-one months, and in 1916 twenty-four months, while the average for the first six months of 1922 was only nineteen months. Today, with a better knowledge of the natural course of the disease as a result of the co-operative efforts of the internist, the laboratory workers, and the surgeon, it is possible to avoid many of the operative dangers to which the patient was formerly subjected. During the year 1922 there were 1,093 operations performed on 633 patients with exophthalmic goiter. Eleven patients died, a mortality by operation of 1.005 per cent, and, by case, of 1.74 per cent.

From time to time, by means of a follow-up system of questionnaires, attempts have been made to ascertain the end results of surgery

of exophthlmic goiter. On account of the natural fluctuating course of the disease, with long periods of remission of symptoms, sufficient time must elapse after the operation to preclude the probability of a recurrence, before conclusions are drawn. Recently an investigation was made of the condition of the patients operated on in 1916, and information was received from 345, or 72 per cent, of the 482 patients successfully operated on. Of this number, 276 patients, or 80 per cent, are cured or greatly improved; another 8 per cent are improved, but have evidence of persistent or recurrent hyperthyroidism, or its residual effects; nine, or 3 per cent, are not improved, and 34, or 9.8 per cent, are dead. (This includes deaths from any cause whatever). A comparison of the results obtained in the different series show, yearly, a progressive improvement, and the data obtained from a detailed study of the case records illustrate very definitely that when maximal benefit does not follow surgery the failure can be attribute to one of the three factors: (1) incompleteness of the operation; that is, failure to remove sufficient gland tissue; (2) delay of the patient in seeking surgery, and (3) failure to eliminate foci of infection after the operation.

Thyroiditis—This condition is uncommon. Infection of tuberculous or nontuberculous origin may occur in the normal thyroid gland, in adenomatous goiter, or in exophthalmic goier. The onset is usually slow and may be without symptoms, except the tumor, which is usually characteristically hard from the beginning. At the onset, especially of the tuberculous form, the parenchyma of the gland is stimulated, there are symptoms of hyperthyroidism, and the condition is often mistaken for exophthalmic goiter. In practically all cases the infective process is diffuse, ultimately destroying all the parenchyma, and myxedema supersedes. Surgery is indicated in the tuberculous and suppurative types, and in cases in which the inflammation is associated with exophthalmic goiter or adenomatous goiter.

Malignancy of the thyroid gland—Malignancy of the thyroid gland is not uncommon. Wilson found the incidence of malignancy in cases of disease of the thyroid in the Mayo Clinic to be one in fifty-seven, and one male to two females. Pathologically the tumors occur as sarcoma, carcinoma, malignant adenoma and malignant papilloma. When the malignancy has invaded the capsule, the diagnosis can be made clinically; otherwise the diagnosis is usually made by the pathologists. However, in all instances of adenoma, if there has been recent rapid growth, malignancy should be suspected. Wide surgical removal of the malignant tissue, in conjunction with intensive radiation by radium and Roentgen ray, offers the best chance for cure. Herbst, in a study of 207 cases of malignancy of the thyroid operated on in the Mayo Clinic prior to January, 1921, found no cures in nineteen cases of sarcoma; five-year cures in 5 per cent of the sixty-two cases of carcinoma; five-year cures in 20 per cent of the 102 cases of malignant adenoma, and five-year cures in 33 per cent of the twenty-four cases of malignant papilloma.

SUMMARY

The mortality of surgery of the thyroid gland compares favorably with that of any major surgery. At the Mayo Clinic during the year 1922 there were 1,983

operations on 1,497 patients with goiter, with a mortality by operation of 0.95 per cent and by case of 1.2 per cent.

The diseases of the thyroid gland amenable to surgery may be grouped under six headings: (1) diffuse colloid thyroid, (2) adenoma without hyperthyroidism, (3) adenoma with hyperthyroidism, (4) exophthalmic goiter, (5) thyroiditis, and (6) malignancy.

Diffuse colloid goiter is a physiologic enlargement of the thyroid gland occurring in adolescence, caused by iodin insufficiency, and cured by the administration of iodin or thyroxin. Unless colloid goiter is associated with adenoma, or causes pressure symptoms, surgery is not indicated.

Adenoma without hyperthyroidism should be treated surgically, partly for cosmetic purposes and for the relief of pressure symptoms, and partly because a certain proportion of patients subsequently develop hyperthyroidism. The operative risk is less than 0.5 per cent, and the operation results in cure in practically 100 per cent of the cases.

If a patient with adenoma of the thyroid gland develops hyperthyroidism, the onset is usually so insidious that surgery is not sought until marked visceral degeneration has taken place, which increases the operative risk and diminishes the chance for complete cure. The operative mortality in this group is between 2 and 4 per cent. Surgery results in cure in about 83 per cent, and in marked improvement in 5 per cent.

Exophthalmic goiter is a constitutional disease apparently due to an excessive (probably abnormal) secretion of the thyroid gland, and, while its cause is unknown, treatment aims to diminish the activity of the thyroid gland. As a result of increased knowledge of the disease and of the dangers incident to surgery, and owing to the fact that patients with exophthalmic goiter are coming to operation earlier, before the development of visceral changes, the surgical mortality has been reduced to 1.005 per cent in terms of operation and 1.74 per cent in terms of cases.

The natural fluctuating course of exophthalmic goiter makes it difficult to evaluate any form of treatment, unless sufficient time has elapsed to preclude the probability of recurrence. For this reason patients operated on in 1916, after the lapse of five and one-half years, were selected for the study. A questionnaire was sent to each of the 482 patients with exophthalmic goiter. Replies were received from 349 patients (72 per cent). Ninety per cent were living, 79 per cent considered themselves cured or greatly improved by the operation, 8 per cent were improved, but showed evidence of hyperthyroidism, or its effect, and 3 per cent were not benefited. In analyzing the data concerning these patients, lack of improvement could be traced definitely to three courses: (1) incompleteness of operation, (2) the long duration of hyperthyroidism before operation, and (3) failure to eliminate foci of infection after operation.

Thyroiditis is rare, and surgery is indicated only in the tuberculous and suppurative types.

Malignancy occurs as sarcoma, carcinoma, malignant adenoma and malignant papilloma, in the ratio of one malignant case in fifty-seven, and the prospect of cure by operation and intensive radium and Roentgen-ray treatment varies with the type of malignancy.

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Dr. Long, President:

I am sure that I voice the sentiments of this Society in expressing our appreciation of Dr. Pemberton's coming from Rochester to deliver this splendid address upon thyroid surgery.

We are now going to be favored with a short talk by Mr. R. B. House, who is archivist of the North Carolina Historical Commission. Mr. House will tell us something of what he has done in the matter of recording history.

IMPORTANCE OF THE MEDICAL PROFESSION OF NORTH CAROLINA AIDING IN THE COLLECTION OF HISTORICAL MATTER RELATING TO THE WORLD WAR

R. B. House, Raleigh

The result of my study of medicine through one day is that the history of the case is important. That brings me to my own subject, the history of North Carolina medical men in the World War. North Carolina has been prone, throughout her history, to do fine things and then allow the history of those things to pass into oblivion. We are still arguing about the number of men sent by North Carolina into the Civil War. A commission had to visit the battlefields in order to get the information.

Although North Carolinians in the Thirtieth Division, on September 29, 1918, definitely broke the Hindenburg Line at Bellicourt, a thing mentioned with approval in the American Army and the British Army, nevertheless the Encyclopedia Brittanica gives no credit to the American troops, and although the North Carolina and South Carolina troops were on the line when the break was made, Sir Philip Gibbs makes the following statement in his book, "Now It Can Be Told": "On September the twenty-ninth the British, with the help of the gallant New York Division, broke the Hindenburg Line at Bellicourt."

Gentlemen, nobody is going to write the history of North Carolina for North Carolinians. We have to do that for ourselves. No one will

write the history of North Carolina medical men in the World War unless the doctors themselves will assist in preserving their own records. The General Assembly of North Carolina, in 1919, began a very generous provision for preserving the record of all North Carolinians in the World War. I had the honor to begin that work, and we have assembled at Raleigh over one hundred thousand documents dealing with North Carolinians in that struggle. Now, these documents are of a general nature. We get from them statistics of the great war, but we can not find those things that give light and color to history. We have to get those from the men themselves. Most of our historical volumes are memoirs and biographies. The thing was too stupendous for one man to get an adequate summary, and we must depend upon personal memoirs and personal records. This brings me definitely to the medical men in the World War. You fall roughly into two divisions, those who served in uniform, and those who served in whatever capacity you were called upon at home. I think it is perfectly safe to say that there was nowhere a doctor in North Carolina, and scarcely a medical student who was sufficiently advanced to be of service, who was not definitely reserved in some way for the United States Government. This means definitely a history of North Carolina during the World War. Now, the history of medical men in the World War falls roughly into three classifications. First, who were the men who served in that War? You say, "You can get their names from the official records." I have examined the records, and have had them examined in other states, and out of every thousand names there are, on the average, a hundred mistakes. We can not count upon the official records' giving you justice for war service. You must compile the records yourselves.

We next want to know what your service was. This means anything from the statistical record of so many days in the Service, and where, to any number of pages of manuscript you might write. In the third place, we want to know something of your observations of people, places, and events during your war service. This would be of inestimable value in putting together, at some future date, the record of North Carolina and also the life of North Carolina.

We seem to have taken on new life in all fields, and there is no telling what forces we must measure in this field to write the true history of the War. As I said, we are at work in Raleigh, and shall continue to work, assembling the records not only of doctors but of all who served in the World War. But the records will never be complete until you become interested in it and begin working yourselves in compiling the records. Now, I suggest that you have a historical section, and that you get to work compiling the official records of all men in the Service. Next compile records of all men who served in any capacity, whether at home or in the Service. In the third place, do not rest with the mere mechanical assembling of documents. There are men in the Medical Society of the State of North Carolina who can write. There is evidence of this in the Sunday papers, from the pen of Dr. Hubert A. Royster, and the Medical Society should draft the pens of such men to write these records. This may seem relatively unimportant, but I repeat here the words of an eminent French historian: "History is preserved only in documents; it

is recorded only in documents; no documents, no history." If the life which you lived during the World War was not sufficiently vigorous to be set forth in documents, it will pass into oblivion. If you do not preserve it in documents of your own making, it will not be preserved.

I came to be with you tonight at the invitation of Colonel Way and Colonel Laughinghouse, who are interested in organizing a section of veterans of the World War.

Dr. Long, President:

That certainly was a very fine talk, and one we should heed. Now, in line with what Mr. House has said, I am going to ask Lieutenant-Colonel Laughinghouse to address us upon the subject. If it is worth while, why not prove it?

A MEDICAL VETERANS' SECTION FOR THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Lt.-Col. Chas. O'H. Laughinghouse, M. O. R. C., Greenville

Days besmirched with mud and mist are ceasing to pay usury to nights. Nature is kicking off her "coverlid of clamminess and cold," in order that she may give birth to spring. In less than a month the tenth of May will greet us—the anniversary of Stonewall Jackson's death; Abraham Lincoln's suspension of the writ of Habeas Corpus; the day set apart by grateful Southern folk to do honor to those who wore the "Gray."

If spirits come back from across the Great Divide, it is at this particular season that the souls of Southern patriots return to the land they loved enough to die for. The shades of the Architects of American Independence; of those who "crossed the bar" during the Mexican War; the Civil War; the Spanish-American War; and the great World War, methinks that on this particular occasion, I can almost hear them say, "Lord God of Hosts, be with us yet, Lest we forget, Lest we forget."

I would not recall bitter memories, because we are, above all, Americans. It is the desire to perpetuate Americanism, as well as to give honor to those to whom honor is due, that prompts me to bring before you the following facts. Kipling says, "The East is East and the West is West," and so far as the great history of the United States is concerned "The North is North and the South is South."

Teach the people Americanism, by all means. Teach it in the schools and churches. Teach it from the press and from the Chautauqua platforms. Let only the lips of those proclaim it that would mould a purer public and personal patriotism. Live it. Live it always, but for the sake of America and for the sake of patriotism itself let no man undertake to blot from geography or history that which bounds the South on the north, and the North on the south.

The leaders of the measures which brought about American independence were south of the Mason and Dixon line.

In the War of the Revolution, from the battles of Moore's Creek, Kings Mountain, Eutaw Springs, and on to Yorktown, the great American recruiting ground, as well as the Americanism which bore the brunt of this War, was situated and lived south of the Mason and Dixon line. Our own State furnished over 25,000 troops in those sparsely populated times, 17,000 of whom fought for love of country and without one cent of pay.

When Washington, sick because of the commercialism and lack of patriotism of New England, crossed the Delaware, North Carolina gave him hope with her six regiments commanded by General Nash. It was with these that he gave battle to the British at Brandywine and Germantown. The great souls who guided the Ship of State during those perilous times lived, moved and had their being south of the Mason and Dixon line. Peyton Randolph, president of the Continental Congress; Richard Henry Lee, author of the resolution declaring the colonies free; Thomas Jefferson, writer of the Declaration of Independence; George Washington, Commander-in-Chief of the Continental Army, and first President of the republic; James Madison, author of the Constitution; John Paul Jones, the naval genius, who carried the American flag into foreign ports and made it feared on every sea, were all born and bred south of the Mason and Dixon line.

During the War of 1912, Massachusetts, Connecticut, Rhode Island and New Jersey refused troops to the Government, while Governor Thomas Brown, of North Carolina, with the brigades of Davis and Dickenson, was fighting the British at Norfolk. While Boston was celebrating British victories Johnson Blakely, of North Carolina, was sweeping the British from the high seas. While blue lights were burning on the New England coast to give information to the British, old Andy Jackson, in command of Tar Heels and Tennesseeans, was down at New Orleans pouring grape and canister into dear old England.

In the Mexican War, when 50,000 volunteers were asked for, 47,000 were offered by the South. This war was fought and won by Southern officers and men, while Massachusetts was threatening to secede.

Those who added most to our country's expansion were south of the Mason and Dixon line. Jefferson added the Louisiana purchase; Monroe the Florida territory; James K. Polk, of North Carolina, added Texas and the parts of the United States formerly belonging to Mexico.

I have heard many times in public speech and private talk that in the Civil War our fathers fought for the right as they saw it, and to this statement I have heard Southern men apologetically agree. Now that sixty years have passed, let's see if facts bear out this statement. We do it from no factional feeling, but because of respect for our forbears, which gives us the right to at least look for and learn the truth.

The South fought for the rights guaranteed her by the Constitution of the United States, which rights were denied her by the might and materialism nurtured and organized in that part of this Union north of

the Mason and Dixon line. There was a conflict of interest between the organized commercial North and the unorganized agricultural South.

The South prospered with her natural advantages. So did the North, but the North devoted her genius, power and statesmanship to gaining commercial advantages and governmental exploitation, to her own sectional benefit.

In 1828, Virginia, North Carolina, South Carolina and Georgia were paying thirty-four per cent of the expenses of the Federal Government and getting next to nothing in return. It was tariff and not slavery, an economic rather than a moral issue, which provoked the antagonism between the North and the South. Nothing was ever invented that so impoverished and despoiled one section to the enrichment of another.

On account of there being four tickets in the field in 1860, thirty-nine per cent of the people elected Lincoln to the Presidency. Realizing that the administration would convert the Government into an engine of oppression and despotism, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana and Texas reassumed their sovereignty.

The Northern party passed the Morrill act, raising import duties to an average tariff of sixty per cent, and war was upon us. The statesmen of the North were adroit enough to combine elements of philanthropy, abolitionism, fanatacism and avarice, which succeeded in placing the South before the world as fighting for slavery, when actually her fight was against commercial robbery and for constitutional rights.

New England's prosperity was based upon the products of her fisheries and factories, along with the sale of rum and slave ships. In the Constitutional Convention, the only man who raised his voice against slavery was Thomas Jefferson, of Virginia.

In 1847, when Virginia gave the great Northwest to the United States, she expressly stipulated that servitude, except for crime, should be prohibited.

The first slave ship built in America was not built in the South, but at Marblehead, Massachusetts, in 1826. The last record of the capture of a slave ship was in 1861, when Lt. J. J. Guthrie, of Washington, N. C., captured and delivered the slave ship Nightingale, of Boston Landing, and nine hundred and sixty-one slaves over to Governmental authorities.

The North sold negroes to the South. The South paid for and amalgamated them into her own unique patriarchial system. Slavery as an institution had its evils, but it was the greatest manual, moral and mental training for a weak and infirm race that the world has ever experienced. Who knows but that it was God's way of civilizing savages? The actual value and earning capacity of slaves was itself a bond for their comfort and care, and the family example and teaching converted them through the great eon of environment from savages to the Sacra-

ment of Christ. The highest tribute paid to any people was evidenced by the North when it acted on the conviction that three or four generations of Southern training made pagan slaves worthy of American citizenship and capable of taking part in directing the destiny of the greatest republic in the world.

When Great Britain and France freed their slaves, they paid their owners for them. But the people north of the Mason and Dixon line sold slaves to the people south of it, then, in spite of the fact that the Constitution of the United States guaranteed the rights of the slave-owner, the purchasee overpowered the purchaser, because slave labor competed with their own and because the South resisted a discrimination in favor of the purchasee against herself.

Is it not wonderful that in less than sixty years men and women, Southern-born, whose surviving parents are still smarting under insults, injuries, and privations hurled against them by their country, should rally to that country as did the South in the World War? Nothing but the hardihood from the Pilgrim Fathers could produce such a people. Nothing could do it but the patriotism which won the Wars of the Revolution and of 1812, the Mexican War and the Spanish-American War.

The history of the South, filled as it is with the deeds of Southern men, did too much to civilize this country and make it ready to meet the test of genuine Americanism and world citizenship for us to neglect any undertaking the influence of which would tend to keep our records straight. Proud as we are of Southern history, when it comes to Americanism WE OF THE SOUTH NOW KNOW NO NORTH, NO SOUTH, NO EAST, NO WEST. No people, no section, can possibly glory more in the fact that we are so strongly cemented as a nation that a plain, honest Southern ploughboy could and did join hands with the enlisted son of a governor of a Northern state, and a President of the United States, for no purpose other than saving the world. It is glorious beyond description to visualize them standing hand in hand and joining voices in the singing of "My Country, 'tis of Thee." They wafted the great chorus across the waters and brought such inspiration to exsanguinated Europe that bleeding Belgium heard it and took heart. Italy, elated by its hopeful strains, gathered her remaining hosts together again, forgetting everything but victory. It reincarnated the waning power of Great Britain, and her basso-profundo joined in so lustily that the Hohenzollern, hearing it, trembled in Berlin. The music so mellowed the inspiring patriotism, loyalty and gratitude of "La Belle France" that verily she led the chorus which gripped every corner of the globe until the whole world made ready and took part in the grandest of grand anthems, "Peace on earth, goodwill toward men."

All this being true, is it not worth while for this Society to form a section for no purpose other than getting on record data regarding our own State, which will give authentic material for the history to be made for our sons and daughters? Had this been done at the close of the Civil War, our State historians would have had data rich in material

with which to gladden and to glorify generations yet unborn.

Dr. Long, President:

Unquestionably the Medical Society of the State of North Carolina has made history worth recording.

CONJOINT SESSION OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA AND THE NORTH CAROLINA STATE BOARD OF HEALTH

WEDNESDAY, APRIL 18, 12:00 M.

Dr. J. Howell Way, President of the State Board of Health, Presiding.

EXECUTIVE STAFF OF THE STATE BOARD OF HEALTH

Executive Officer and Secretary—Dr. W. S. Rankin, Raleigh.

Assistant Secretary—Dr. G. M. Cooper, Raleigh.

Assistant to the Secretary—Mr. R. B. Wilson, Raleigh.

Director Bureau of Medical Inspection of Schools—Dr. J. S. Mitchener, Raleigh.

Director Bureau of County Health Work—Dr. E. F. Long, Raleigh.

Director Bureau of Vital Statistics and Epidemiology—Dr. F. M. Register, Raleigh.

Director Bureau of Engineering and Inspection—H. E. Miller, C. E., Raleigh.

Director State Laboratory of Hygiene—Dr. C. A. Shore, Raleigh.

Director Bureau of Maternity and Infancy—Dr. K. P. B. Bonner, Raleigh.

After the call to order by President Way, the report of the Secretary of the State Board of Health was submitted by Dr. W. S. Rankin, as follows:

ANNUAL REPORT OF THE SECRETARY OF THE NORTH CAROLINA STATE BOARD OF HEALTH

RESPONSIBILITY OF THE STATE MEDICAL SOCIETY FOR HEALTH WORK

Mr. President and Members of the Conjoint Session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health:

The State of North Carolina has entrusted to this Society forty-four and four-ninths per cent (44 4/9%) direct control and seventy-seven and seven-ninths per cent (77 7/9%) indirect control over its public health. The State Medical Society names four of the members of the State Board of Health, that is, four of the nine directors; and seven members of the Board, seven of the nine directors, are members of the Society. The State Board of Health, with your seven members representing you on it, this year has the responsibility of wisely expend-

ing the sum of $475,000 for the protection and advancement of the health of the citizens of this State. Because of your large control over State health work you are credited, on the one hand, with a large share of the credit for what has been accomplished, and, on the other hand, you are charged with a heavy responsibility for the public health work of this State in the future. The laws of the State, recognizing your large share of direction over its public health work, require that the Board submit to you at this time an account of its work.

The work of the Board in all of its divisions has now become too extensive to permit of a complete and detailed report within the time limits of your meeting. Such reports, however, are unnecessary. The detailed activities of the Board are covered in the recent Biennial Report. Nor is it necessary to occupy your time with a discussion of old established policies and practices which have already been submitted to you and with which you are more or less familiar. With the extent of the work of the Board and with your time limitations, we shall be content in this report to call attention to (1) recent legislation, and (2) contemplated changes in policy. If there is any member of the Society who wishes any additional information upon any phase of the work of the Board we shall be glad to supply the information on request.

LEGISLATION

The State Board of Health did not sponsor any important health legislation at the hands of the last General Assembly; moreover, there was no important health legislation introduced in that General Assembly with the exception of the open formula bill, which sought to eliminate secrecy in the sale of trade-mark remedies. This bill was introduced by Senators Armfield and Varser. It was the same bill that met defeat in the General Assembly of 1917 and its fate was like that of its predecessor. The open formula bill was a meritorious measure, capable of being successfully defended in any county in North Carolina without regard to the ability of its opponents, but in the bill public interests came into head-on collision with large financial interests and, according to the rule, money talked, the inarticulate masses were silent, and their representatives voted in committee five to three against the bill.

The Appropriation Committee recommended and the Legislature passed the entire budget of the Board, and for this the Board desires to commend the wisdom of the General Assembly in adequately providing for the health of the people, and to express its most grateful appreciation.

POLICY

The State Board of Health has never inaugurated an important public health policy nor made an important change in an established policy without first submitting what it had in mind to this Society. As witnesses to this statement see your own Transactions. Furthermore, in policy, the North Carolina State Board of Health is thoroughly democratic. The Board has sought and seeks to minimize central control and direction and magnify local responsibility and control over matters relat-

ing to the public health. The Board knows that the best government is the government nearest the governed and which is most directly and completely under their management.

Local interest, responsibility and activity in matters of common concern, the very essence of democracy, are not stimulated and developed when some central or outside agency assumes them; rather they are inhibited. The community or county, like the individual, gains strength and self-reliance by doing for itself—not in having someone do for it. The State Board of Health seeks to assist the counties in recognizing their public health interests and in formulating local activities through which such interests may be conserved and advanced.

In endeavoring to stimulate and develop local interests the Board of Health recognizes the local, or county, medical profession as occupying a strategic position, and believes that the contact with the county should be made through the medical profession. There are a number of sound reasons which will sustain this position.

In the first place, initial contact with the county should be made through the medical profession because the medical profession and not the public is, according to its statement of principles, primarily responsible for the public health. Chapter III, Section 1, Principles of Medical Ethics of the American Medical Association, says: "Physicians, as good citizens and because their professional training specially qualifies them to render this service, should give advice concerning the public health of their community." This weighty and accepted responsibility of the profession may be shirked but not avoided. Never will this professional responsibility be stimulated and quickened if outside agencies, interested in improving the public health of a community or county, ignore or go around instead of through the medical profession to the public or their representatives. On the other hand, the responsibility of the profession for public health problems is vitalized and discharged if those interested in local health problems bring them clearly, fully and confidently to the local profession, which has accepted its responsibility for health, both private and public. Duty is largely a matter of establishing responsibility.

In the second place, initial contact with the county government should be made through the local medical profession because it is not only responsible but it has proven responsive to public need. Dr. Biggs has said "public health is purchaseable." We may add "it is salable." If it is not sold, the fault nine times in ten lies with the salesman—the health officer presenting the proposition—and not with the prospective purchaser—the local medical society to which the proposition is submitted. Public health problems of a local character may be submitted safely to the local profession for their consideration and action.

In the third place, initial contact with the county should be made through the local medical profession because a great part of the work involved in the solution of local health problems can be, and should be, performed by the members of the profession. Either the local medical profession must itself assume the actual work involved in public health

protection and receive a reasonable remuneration for such work or else the work must be performed by a separate group of workers. We must either combine the work of private practice with that of public health or separate the two. Separation means lack of understanding, absence of co-ordination between workers in closely and vitally related fields, friction and conflict with resulting harm both to private practice and public health. Combination means understanding, co-ordination and increased efficiency for both branches of medicine. The local profession can serve and must serve the public needs as well as the private needs; and, as they are reasonably paid for the one they must be reasonably paid for the other. Public health is worth paying for, and it is a short-sighted policy to attempt to develop so important a work, so large and necessary a work, on a charity basis.

There are many local health problems in every county. The physicians of the county should assume the initial responsibility in recognizing these problems, in classifying them according to their relative importance, in directing public attention to them and in pointing out to the authorities a practicable plan for solving them. This is not only an obligation of local medical societies; it is, if they will but see it, a great opportunity not only for service but for reward. Every county medical society should have a strong committee on public policy. With such a committee in every county the State Board of Health could make its official contacts with the county government through the channels of organized medicine.

Upon motion by Dr. Albert Anderson, the Secretary's report was adopted.

A message from Dr. Richard H. Lewis, Raleigh, was then read, expressing his regret at his enforced absence from the annual meeting of the Society, and, upon motion by Dr. Albert Anderson, the Secretary was instructed to send Dr. Lewis a telegram expressing the Society's appreciation of his message and regret at his absence, the motion being seconded by Dr. J. T. J. Battle and adopted unanimously by a rising vote.

Dr. Thomas E. Anderson and Dr. Charles O'H. Laughinghouse were unanimously elected to succeed themselves as members of the State Board of Health.

President Way announced that the terms of two members of the State Board of Health appointed by the Governor, Dr. J. Howell Way and Dr. A. J. Crowell, had expired with the beginning of this session, and that they had been reappointed by Governor Morrison. He also announced that in place of Mr. C. E. Waddell, of Asheville, the engineer member of the Board, the Governor had appointed Mr. James P. Stowe, of Charlotte, a druggist.

The Secretary of the Board announced the resignation of Dr. F. R. Harris, of Henderson, and the election of Dr. D. A. Stanton, of High Point, to fill the vacancy. The Secretary also announced the election of Dr. J. Howell Way, of Waynesville as President of the Board to succeed himself.

The Conjoint Session then adjourned.

WEDNESDAY, APRIL 18, 8:00 P. M.

Upon motion of Dr. J. T. Burrus, the President and Secretary were instructed to prepare certificates of merit to be awarded to contributors of scientific exhibits, as recommended by the Committee on Scientific Exhibits.

The Committee on Scientific Exhibits (Dr. L. A. Crowell, Lincolnton, Chairman; Dr. John Q. Myers, Charlotte, and Dr. C. O. Abernathy, Raleigh) reported that certificates of merit should be awarded as follows:

First: Dr. B. T. Terry, Vanderbilt University, Nashville, Tenn.; pathological specimen.

Second: Dr. Albert Anderson, State Hospital, Raleigh; exhibits of occupational therapy and work done by inmates of the State Hospital.

Third: North Carolina Orthopedic Hospital, Gastonia; charts and appliances.

Fourth: University of North Carolina, Dr. Wm. de B. MacNider; exhibit of effect of digitalis on heart muscle.

Fifth: Drs. W. D. and A. W. James, Hamlet Hospital, Hamlet; photographs of cancer and radium treatment.

Upon motion, duly seconded and carried, the thanks of the Society were extended to all exhibitors who had exhibits at this meeting of the Society. Dr. J. F. Abel, of Waynesville, then moved that a vote of thanks be extended to the President and to the Committee on Scientific Exhibits for their initiative and for the splendid piece of work that had resulted therefrom. Carried.

REPORT OF THE BOARD OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

Mr. President and Members of the Medical Society of the State of North Carolina:

This Board has attempted in the past, by means of an annual report, to keep the medical profession advised as to events touching upon and affecting medical licensure that have transpired during the past year. In accordance with this custom, herewith is submitted a brief history of the last twelve months. This period has been marked by at least four events that will be of more than passing interest to you.

1. The total number of licentiates has been gradually declining for the past several years and the past year, reached the lowest point in twenty-two years. A total of only sixty-six received license, and of this number thirty-seven were licensed following written examinations and twenty-nine through indorsement of credentials. This number is not sufficient to replace the active practitioners lost by death in the same period. As a result, the

normal increase in population is not being provided for and rural sections are beginning to feel acutely the shortage in medical service. But for the fact of licentiates coming in from other States, the situation would be much graver by reason of only thirty-seven receiving license following examination. This was the smallest number of applicants licensed by examination since 1884, when thirty-four were licensed.

2. The past year has seen the completion of the record of unlicensed registered physicians as far as is humanly possible to obtain. For the first time in the history of medical licensure, the Board now has a record of all physicians ever legally qualified to practice medicine in the State. In this connection, the law now permits only physicians presenting a license from the Board of Medical Examiners to register in the various counties.

3. For the first time since the creation of this Board a special session was held to pass upon the application of one man. This session was authorized following the earnest solicitation of a committee consisting of the mayor of one of the State's larger towns and the chairman of the Board of Trustees of the local hospital, wherein representations were made as to urgent need, a need so urgent as to impel the defraying of the expense incident to holding a special session.

4. We have purposely held for the last the most important development of the past year touching upon medical licensure; one that will vitally affect the present operation of the Medical Practice Act if present plans are successfully carried through. During the past session of the General Assembly Mr. Baxter Durham, State Auditor, recommended that all boards now controlling licensure in the State be consolidated and placed under the control of a bureau of registration, said bureau to be made an integral part and under the supervision of the Department of Education. In line with this proposal a bill was introduced by Senator W. L. Long, but was never reported out of the committee to which it was referred. In a conversation with Senator Long he advised that the bill was introduced for the purpose of enabling the members of the General Assembly to think the proposition over. This being true, there is every reason to believe that the question will be actively presented to the General Assembly at some time in the near future. It is therefore necessary that immediate thought be given this important matter, that definite action may be taken as to what the attitude of the medical profession shall be at the time this question is again raised; how the issue shall be met.

It will not be amiss to point out to you the changes that would come with the enactment of this proposal into law. The election of the Board of Medical Examiners of the State of North Carolina will pass from the Medical Society of the State of North Carolin into other hands. There is a danger that the selection of the personnel of the Board will be based upon political favor rather than profes-

sional fitness, as has been the history of selection of previous Boards by medical men. Similiar plans have been tried in other States and instances of wholesale fraud in the issuance of licenses are constantly coming to light. Under the present system the Board is limited in funds to the fees derived from the applicants; under the new law all funds would be paid into the State Treasury and expenses in the administration of the law would be paid out of State funds. Almost without exception, history shows that this method of administration is a drain upon the public funds, in that the cost of operation is greater than the revenue. Finally, it is impossible to predict the effect of the enactment of this law upon our present Medical Practice Act, laws that have required sixty-four years to enact. There is no question as to their being materially modified and no one knows what will be offered to replace them. These are the principal points to be considered, although many minor points might be made. It is for you to seriously consider this question at this session and determine what your course shall be when the issue is raised again.

Respectfully submitted,
BOARD OF MEDICAL EXAMINERS
OF THE STATE OF NORTH CAROLINA,

By K. P. B. BONNER, *Secretary.*

DR. L. B. MCBRAYER, Secretary-Treasurer (Seconding a motion to accept the report of the Board of Medical Examiners):

I feel that permanent record should be made, and that the members of the Society who are here present, and those who are absent, should know of the splendid work that the present Board of Medical Examiners has been doing, and particularly the Secretary of that Board, Dr. K. P. B. Bonner, who has just offered this report. Dr. Bonner is a bundle of efficiency. He set to work to study the records of the medical profession pertaining to the thing he was doing, to-wit, licensure. He found that some of the ablest men that had been in the profession, and who have now passed over—men who had held the highest offices in the gift of the Society—had no record that could be found that they were legally qualified practioners. That probably encouraged him, or interested him, to greater endeavors, until, as he modestly intimated, he—largely by himself, but backed always when needed by whatever number of the medical profession he needed—has secured the passage of laws which make it possible for him to secure the name of every person who is now or ever has been a legal practioner in the State of North Carolina. He has gone to great personal effort to properly index and make permanent records of all these things. I am sure that it would be a great pleasure to all of you to do what I have done, visit him in his office and look through these files. I desire to express for myself—and I am sure that every member of the Society, both those present and those in other regions, will join me in this expression—appreciation of the splendid work done by Dr. Bonner during his

term of office as Secretary of the Board of Medical Examiners. I take great pleasure in seconding the motion to adopt the Doctor's report.

The motion was carried and the report adopted.

Dr. J. T. Burrus:

I move that this Society go on record as opposing any change in the present method of electing or selecting its Board of Medical Examiners, and that the Committee on Public Policy and Legislation be so instructed.

Motion seconded and carried.

LIST OF PHYSICIANS LICENSED BY ENDORSEMENT OF CREDENTIALS IN DURHAM ON DECEMBER 12, 1922

Name	*Address*	*Medical College*	*State*
Barr, Everett Sperry	Philadelphia, Pa.	Med. Co. Va.	Virginia
Burress, Donnie Arnold	Iva, S. C.	Louis. Hosp. Col.	So. Car.
Cash, Joseph Blain	Chesnee, S. C.	Atlanta Medical	So. Car.
Divers, Douglas Shelburne	Martinsville, Va.	Med. Col. Va.	Virginia
Ezell, William J. (col.)	Paris, Tenn.	Meharry Medical	Tenn.
Gaul, John Stuart	Washington, D C.	Med. Chir., Phil.	Penn.
Huffines, Thomas Ruffin	Fort Wayne, Ind.	Univ. Indiana	Indiana
Murphy, Douglas Power	Philadelphia, Pa.	Univ. Penn.	Nat. Board
Neblett, Herbert Clarence	Langley Field, Va.	Med. Col. Va.	Virginia

LICENSED BY ENDOSEMENT OF CREDENTIALS IN RALEIGH ON JANUARY 31, 1923

Name	*Address*	*Medical College*	*State*
Broadway, Rembert Ernest	Manning, S. C.	Med. Col. S. C.	So. Car.
Mahoney, Alto Freed	Clio, S. C.	Univ. Louisville	So. Car.
Sanders, Freeman Hubert	Bowersville, Ga.	Atlanta Medical	Georgia
Wynkoop, Daniel Woodbury	Babylon, N, Y.	Columbia Univ.	New York

LICENSED BY ENDORSEMENT OF CREDENTIALS AT SPECIAL SESSION HELD IN RALEIGH APRIL 30, 1923

Name	*Address*	*Medical College*	*State*
Vaughn, Richard Wingfield	Richmond, Va.	Med. Col. of Va.	Virginia

PHYSICIANS TO WHOM LICENSES WERE ISSUED JULY 16, 1923

LICENSED BY ENDORSEMENT OF CREDENTIALS

Angel, Furman	Portsmouth, Va.	U. S. Navy	
Brackin, Henry Bryan	Goldsboro	Tennessee	

Bryce, Roderick A.	Hartwell, Ga.	Georgia
Campbell, Arthur S.	Raleigh	Illiinois
Cliatt, Claude Eugene	Wallburg	Georgia
Dodge, George F.	Athol, Mass.	Mass.
Grote, Carl A.	Huntsville, Ala.	Alabama
Harper, Walter H.	Spartanburg, S. C.	S. Carolina
Herring, Robert A.	Washington, D. C.	U. S. P. H. S.
Hilborn, Caroline L.	Fletcher	Ohio
Hilborn, Robert R.	Fletcher	Ohio
Jervey, Allen J.	Tryon	S. Carolina
Joyner, William L.	Durham	Tennessee
Kellam, John Wise	Oteen (U. S. Hospital)	Virginia
Kinard, Drayton Duncan	Ninety-Six, S. C.	S. Carolina
McAllister, Archie	Oteen (U. S. Hospital)	Georgia
McDaniel, Samuel P.	Virginia, Minn.	Georgia
McDowell, James D.	York, S. C.	S. Carolina
Malone, Jeremiah D.	Marietta, Ga.	Georgia
Rogers, William A.	Fontana	Tennessee
Simmons, Raymond R.	Petersburg, Va., R. 3	Virginia
Stanley, John G.	Marion, S. C.	S. Carolina
Taylor, Hurbie A.	New Bern	Alabama
Thomas, Kelly C.	Welch, W. Va.	W. Virginia
Van Epp, Owen B.	West Palm Beach, Fla.	Florida
Verner, Carl H.	New Bern	Georgia
Wilkerson, Jesse B.	Colorado Springs, Colo.	Tennessee
Young, William W.	Asheville	Virginia

LICENSED AFTER EXAMINATION

Name	*Address*	*Average Grade %*
Adams, Edward Everard	Murphy	82 5/7
Aldridge, Fred Cutler	Durham	89 2/7
Anderson, Alan Ramseur	Statesville	94 6/7
Archer, Vincent William	Black Mountain	90 6/7
Barefoot, Graham Barefoot	Hallsboro	87 2/7
Bizzell, Marcus Edward, Jr.	Goldsboro	81 4/7
Boone, Williams Waldo	Durham	83 3/7
Bowers, Thaddeus Ray, Jr.	Littleton	85 1/7
Brinn, Thomas Preston	Hertford	91 6/7
Burns, Joseph Eugene	Goldston	90 2/7
Britt, James Norment	Rochelle, Ga.	81 2/7
Byrd, William Carey	Durham	83
Cozart, Sam Rogers	Stem	88 6/7
Craddock, Alva Brown	Jackson Gap, Ala.	87 1/7
Crisp, Sellars Mark	Falkland	88 6/7
Eagle, James Carr	Spencer	88 5/7
Elliott, George Douglas	Thornwall	81 3-7
Foote, Lois Brooke	Washington, D. C.	91
Fox, Powell Graham	Dreweryville, Va.	81 6/7
Furr, William Charles	Holly Springs	91 5/7

Name	*Address*	*Average Grade %*
Goodwin, Oscar Sexton	Apex	90 5/7
Gwynn, Houston Lafayette	Yanceyville	86 5/7
Hambrick, Robert Theodore	Roxboro	84 3/7
Herman, Charles Bernard	Conover	84 6/7
Hooker, John Samuel	Aurora	84 6/7
Hughes, Walter Jones	Greensboro	81 1/7
Hunt, William Bryce	Lexington	89 3/7
Ilsley, Morrill Leonard	Asheville	85 6/7
Jennette, William Carl	Fremont	83 6/7
Jones, Robert Rives	Walnut Cove	83 5/7
Joyner, George Richardson	Wilmington	88 5/7
Keith, Marion Yates	Currie	85 4/7
Long, Ira Clinton	Morehead City	90 3/7
Massey, Charles Caswell	Princeton	86 4/7
Menzies, Henry Hardinge	Hickory	83 1/7
Merritt, Zenan Lewis	Bolton	86 2/7
Murphy, Gibbons Westbrook	Wallace	85
Murray, Robert Lebby	St. Pauls	86
Newton, Howard Lowell	Crown Point, Ind.	87 3/7
Parker, Alan Phares	Raleigh	86 5/7
Parker, George Farrar	Asheville	90 2/7
Pearson, Raymond	Monroe	87 3/7
Pool, Bennette Baucom	Clayton	84 6/7
Poston, James Lewis	Statesville	86 3/7
Rainey, Willard Greenberry	Greensboro	90 5/7
Richardson, George Alexander	Dover	84
Rivenbark, Matthew James	Wake Forest	86 4/7
Robertson, John Newton	Charlotte C. H., Va.	89 1/7
Schenck, Sam Moore	Lawndale	87 5/7
Shaw, John Alexander	Fayetteville	83 6/7
Smith, Randall Collins	New Bern, R. 3.	87 6/7
Smith, Robert Edwin	Mount Airy	83
Sowers, Roy Gerodd	Linwood	86 4/7
Sumner, George Herbert	Franklinville	90 2/7
Tayloe, Josh	Washington	88 4/7
Thomas, George Norfleet	Oxford	86
Toy, Calvert Rogers	Chapel Hill	91 3/7
Tyler, Earl Runyon	Durham	91 2/7
Warrick, Luby Albert	Goldsboro, R. 4.	86 2/7
Watkins, William Merritt	Durham	86 5/7
Wilkes, Marcus Branch	Laurel Hill	80
Wilkinson, Robert Watkins, Jr.	Wake Forest	80 5/7
Wilson, Archer Alexander	Oxford	89
Winstead, Rolland Tyson	Rocky Mount	80
Yoder, Paul Allison	Hickory	90
Crawford, J. H.	Unaka	.

(Limited license was granted Dr. Crawford to practice in Beaver Dam Township, Cherokee County, only. Date of session granting this license was June 25-29, license issued as of July 16, 1923).

EXAMINATION IN SURGERY

Dr. L. N. Glenn

1. Discuss briefly inflammation, drainage, dressings.
2. Define: -ectomy, -otomy, -ostomy, -oma, -itis, -taxis, sepsis, and caput succedaneum.
3. What general principles apply in treatment of fractures, dislocations, malignant tumors, and benign tumors?
4. Mention complications which might follow an ordinary laparotomy and tell how you would handle them.
5. How would you combat bad effects of ether, chloroform, cocain?
6. Treat lupus, epistaxis, caruncle, ranula, nevus.
7. Reduce the following dislocations: elbow, either end of clavicle, base of finger or thumb.
8. Justify a uterine curettement—name instruments used and do the operation.
9. Justify amputation of a crushed limb, and select location of amputation.
10. Describe a compound fracture of femur and treat it.

EXAMINATION IN PHARMACOLOGY, MATERIA MEDICA AND THERAPEUTICS

Dr. J. G. Murphy

1. Give: (a) Dose and method of administering arsphenamine.
   (b) Indications for its use.
   (c) Contraindications for its use.
   (d) Symptoms and treatment of toxic dose.
2. Discuss physiological and therapeutic action of quinine in the treatment of malaria.
3. Outline the treatment of a drowning man, age 21, pulled out of the water in a state of unconsciousness.
4. (a) Describe the physiological action of codein.
   (b) What is the source of the alkaloid?
   (c) What advantages have we in the use of codein rather than morphine?
5. Mention five emetics and give the dose of each.
6. Define: (a) narcotics; (b) anesthetic; (c) sedative; and give an example of each.

7. What drugs would you use to arrest hemorrhage from the lungs, and explain how they accomplish the result?

8. Write a prescription for:
   (a) Erysipelas.
   (b) Iritis.
   (c) Acute otitis media.
   (d) Scabies.

9. Mention four remedies used to control vomiting and state the dose of each.

10. Explain the meaning of the term anaphylaxis.

EXAMINATION IN OBSTETRICS, GYNECOLOGY AND PEDIATRICS

Dr. K. P. B. Bonner

1. Describe the various gross tissue changes through which the female passes in puberty.

2. Tell in detail the macroscopic development of the human fetus in the various months.

3. Diagnose and deliver a baby with a freak breech presentation whose sacrum is in the left and posterior position.

4. Give the symptoms, diagnosis and treatment of ectopic pregnancy at the third month. Tell the technic and various steps of the operative procedure and your method of meeting any emergencies that might arise.

5. Define trachelorrhaphy, subinvolution, ventrosuspension, superinvolution, supplementary menstruation, sterility, oöphorectomy, rectocele, cystocele, hematosalpinx.

6. How would you treat an inevitable abortion at the fourth month?

7. Give symptoms, diagnosis, prognosis and treatment of scarlet fever.

8. Justify artificial feeding in a baby six months old and proceed with it.

9. Define hydrocephalus, cyclic vomiting, chorea, adenoids, scurvy, enuresis, habit-spasm, cretinism, intussusception, laryngitis stridulosa.

10. (a) What are the causes of contracted pelves?
    (b) What is vesicovaginal fistula, and the causes of same?
    (c) What is the best index as to the general well being of infants?

EXAMINATION IN ANATOMY AND EMBRYOLOGY

Dr. L. A. Crowell

1. Name the different layers of the blastoderm, and, in a general way, tell what structures are developed from each.

2. Name the foramina in the sphenoid bone and the structures that pass through them.

3. Describe Gimbernat's ligament.

4. Give origin, insertion, and nerve supply of the following muscles: Trapezius, deltoid, biceps femoris, adductor magnus.

5. Trace a drop of blood from the superior vena cava to the appendix vermiformis.

6. Of what artery is the middle meningeal a branch?

7. Give deep origin, foramen of exit, distribution and function of the third cranial nerve.

8. Describe Hunter's canal.

9. Name the processes of the dura mater, and describe each.

10. Describe, in detail, an intestinal villus.

EXAMINATION IN PRACTICE OF MEDICINE

Dr. William P. Holt

1. Differentiate cholelithiasis from: (a) Nephrolithiasis; (b) Acute appendicitis. Give briefly treatment of each. What is Dietel's crisis?

2. Discuss malarial hemoglobinuria; give synonyms. Name the different malarial organisms. How would you prevent malaria?

3. Name the common parasites that infest the ailimentary tract of man; briefly describe the ova of each and give specific treatment.

4. Give test of renal function; of digestive function. How do you determine basal metabolism?

5. (a) Tell in what general conditions leukocytosis is present.
   (b) In what diseases is leukocytosis absent?
   (c) Name several diseases the ophthalmoscope would be an aid in diagnosing.
   (d) Name the diseases the microscope would be an aid in diagnosing.

6. Differentiate pleural effusion from delayed resolution of the lung following pneumonia. What is skodaic resonance?

7. Name the varous casts found in albuminous urine and give the import of each.

8. Define epistaxis, hematemesis, hemoptysis. What is hemophilia, and what would you do to relieve this condition in an emergency?

9. What is noma? Give prophylaxis, symptoms and treatment.

10. Give the diagnosis and treatment of the following case: Female, age 17, pregnant six or seven months. Symptoms—pain, tenderness and

muscular rigidity over the right side of the abdomen extending to the back. Pulse 100 to 120. Temperature 98 to 104. Respiration not markedly accelerated. Twenty-four hour output of urine 28 ounces. Chemical analysis showed large amount of albumin. Microscopic examination revealed pus cells in abundance. Leukocyte count high.

EXAMINATION IN HYGIENE, CHEMISTRY AND PHYSIOLOGY

Dr. W. M. Jones

Hygiene

1. Define vital statistics.
2. What are the principal methods of malarial prevention and control?
3. Uncinariasis: transmission, diagnosis, prevention and treatment.

Chemistry

4. Name the inorganic and organic constituents of normal urine.
5. Normal per cent. of each cell-type in a differential count.
6. Convert 47 degrees Centigrade to Fahrenheit and give method.
   Change to metric system the following prescription:

R/	Strychnin. Sulph.		gr. ¼
	Quinin. Sulph.		grs. xv
	Fluid. Ext. Glycerrhiz.		dr. ii
	Syrupi	q. s.	oz. ii

M. et Sig.—Teaspoonful every four hours.

Physiology

7. What is the essential clinical difference in hypo- and hyperthyroidism and how determined?
8. What are the causes of the normal heart sounds?
9. What are the events occurring in a complete cardiac cycle?
10. Trace a ham-sandwich through the digestive tract.

EXAMINATION IN HISTOLOGY, BACTERIOLOGY AND PATHOLOGY

Dr. C. A. Shore

1. Describe the natural distribution of the tetanus bacillus; its cultural characteristics; its distribution in the human body in cases of infection.
2. What prophylactic measures other than quarantine would you advise against diphtheria?
3. Name three spore-bearing bacteria pathogenic to man; name five bacteria which may cause acute intestinal infection in man; name two

protozoa which are common causes of infection in man in North Carolina.

4. What diseases may be transferred from domestic animals to man? Give briefly the method of infection.

5. Describe the immunological principles underlying active and passive immunity. Give two examples of each.

6. Discuss briefly the pathogenesis of typhoid fever. What is the distribution in the human body of the pathogenic organism?

7. Describe the structure of a thrombus. How may a thrombus be distinguished from a postmortem clot?

8. Discuss briefly the function of the hypophysis.

9. Describe the injury to the pancreas which would follow ligation of the pancreatic ducts. What effect would such ligation have on the organism as a whole? Would the effect differ from that produced by complete extirpation?

10. Practical.

MEMORIAL EXERCISES

REPORT OF COMMITTEE ON OBITUARIES

Your Committee begs to report that on July 10, 1922, the following letter was mailed to the secretaries of all the county societies in the State:

Greenville, N. C.,
July 10, 1922.

To The Secretaries of the County Societies,
In the State of North Carolina.

My dear Doctor:

This is to advise you that at the last meeting of the Medical Society of the State of North Carolina, I was appointed Chairman of the Committee on Obituaries for the term of one year.

I am writing to ask if you will be kind enough to advise me of any deaths that may occur among the members of your Society during the period from April 27, 1922, to the date set for the next meeting of the Medical Society of the State of North Carolina.

I am depending upon the secretaries of the county societies throughout the State to assist me in procuring any data necessary to the fulfillment of my duty as Chairman of this Committee.

Thanking you in advance for any assistance you can give me, I am

Most sincerely,

CHAS. O'H. LAUGHINGHOUSE.

On March 12, 1923, a second letter was mailed to the secretaries of county societies, as follows:

Greenville. N. C.,
March 12, 1923.

To The Secretaries of the County Societies,
In The State of North Carolina.

My Dear Doctor:

This is to advise you that at the last meeting of the Medical Society of the State of North Carolina I was appointed Chairman of the Obituary Committee for the term of one year.

On July tenth I wrote you asking if you would be kind enough to advise me of any deaths occurring among the members of your Society between the dates of April 27, 1922, and April 17, 1923.

I am writing today to ask for a record of all deaths among the members of your Society, if any, as well as to request that your Society prepare obituaries for all deceased members and forward copies to me not later than March twenty-third.

Very sincerely,

CHAS. O'H. LAUGHINGHOUSE.

Several obituaries were sent in and are attached to this report. As soon as this report is delivered your Committee is asking that all representatives from county societies who have obituaries to present be heard.

The following is the list of physicians who have died during the past year, as reported by the county secretaries to your Committee:

Name	*Address*	*Date of Death*
Dr. George M. Bell	Wakefield	
Dr. Archibald Campbell	Statesville	July, 1922
Dr. F. A. Carpenter	Statesville	December 2, 1922
Dr. R. N. Cartwright (nonmember)	Fairfield	December, 1922
Dr. Arch Cheatham	Durham	December, 1922
Dr. G. L. Clark	Clarkton	February, 1922
Dr. W. D. Crocker	Warsaw	January, 1923
Dr. Daniel Eugene Eagle	Statesville	January, 1923
Dr. Frank P. Gates	Manteo	May, 1922
Dr. George A. Graham	Raeford	February 1, 1923
Dr. I. A. Harris	Jupiter	December 29, 1922
Dr. Wm. P. Horton	North Wilkesboro	May 7, 1922
Dr. Edwin E. Jones	Elm City, R. F. D.	
Dr. George N. Jones	Elm City	
Dr. A. C. Jordan	Durham	June 7, 1922
Dr. M. M. King	Brevard	March 4, 1923

Dr. P. B. Loftin	Beaufort	May, 1922
Dr David Lucas	Enfield	January, 1923
Dr. H. W. McCain	High Point	October 3, 1922
Dr. J. H. McMullan (nonactive member)	Edenton	December, 1922
Dr. Robert Hall Morrison	Mount Mourne	August 7, 1922
Dr. M. L. Smoot	Fayetteville	February 6, 1923
Dr. James K. Stockard	Greensboro	March 23, 1923
Dr. William Grimsley Taylor	Greensboro	December, 1922
Dr. Neill Archie Thompson	Lumberton	September 28, 1922
Dr. J. Frank Thorpe (nonmember)	Rocky Mount	January 14, 1923
Dr. Karl von Ruck	Asheville	November, 1922
Dr. George Henry West	Fairmont	November 30, 1922
Dr. John R. Wheless	Spring Hope	December 4, 1922
Dr. James R. Williams	High Point	January 1, 1923
Dr. T. I. Williams	Staley	November, 1922

Respectfully submitted,

Chas. O'H. Laughinghouse,
W. L. Dunn,
E. T. Dickinson,
Committee.

IN MEMORIAM

Arch Cheatham, M.D.

Obedient to the instructions of the Durham-Orange County Medical Society in session recently assembled, the undersigned committee desires to express their sense of loss sustained by the Society and the public in the death of Dr. Arch Cheatham.

The black-stoled messenger of death has again summoned from us one of the Society's most beloved members, and we desire to put on record our appreciation of his sterling character, his accomplishments as a physician, and his service to this community, to the State and to the medical profession.

Throughout his many years in general practice he was to his patients and clientele loyal, faithful, untiring, never counting the cost to himself in comfort or time, but looking only to the welfare of the unfortunate sick who were under his care, desiring only to do all that he might to alleviate their suffering and brighten their dark hours. And in doing this he tied to himself through the years warm, true and faithful friends among his patients, and won an enviable reputation as a physician.

Called to public service, he gave up his general practice some nine years ago and served his fellowmen as Superintendent of Public Health. In this position in no small part did he secure with the reluctant public the observance of principles promoting the community's health. He was like a brave general on the battle front, struggling against long established prejudices and slothfulness in matters of health. He had progressive ideas, but with them

he carried sanity and the common sense of the practical man in advancing them.

Desiring always the best interest of those whom he served and also their goodwill, he was yet absolutely courageous in advocating and enforcing the rules of health and sanitation. Determined though he was in what he deemed wise and right, he was yet open-minded to new ideas. Thus throughout his career his work grew and expanded, and so it resulted that his influence was recognized over our County and indeed throughout the State. Even when ill health a year ago forced his retirement his great service was so valued that he was still retained in the public health work in a consulting capacity.

As a citizen his interest was keen in all public matters. This displayed itself particularly in his continued and intelligent advocacy of better roads, and he was one of those citizens who planted faithfully the seed that now is being harvested in our State's wonderful road system. He was a citizen of real worth.

To the members of his family we extend our sympathy in their deep bereavement, and bid them find consolation in the splendid heritage he has left behind in a life well lived, in duty well done and in the gratitude of his fellowmen that follow after him.

Be it resolved, that a copy of this memorial be spread on our minutes, a copy sent to the family of the deceased, and copies presented to the local newspapers.

(Signed) Robert L. Felts,
B. W. Fassett,
B. U. Brooks,

Committee, Durham-Orange County Medical Society.

Amendment December 11, 1922:

Isaac A. Harris, M.D.

(Report of the Committee apointed by the Buncombe County Medical Society to draft resolutions on the death of Dr. Isaac A. Harris. Read before the Society January 15, 1923; on motion, ordered filed on the minutes, with a copy to be sent to the State Society's Obituary Committee.)

Dr. Isaac Arthur Harris was born in 1837. At the age of twenty-three attended lectures at Jefferson Medical College, leaving that institution in 1861 to join the Confederate Army in the Civil War. He was elected surgeon in the 69th Regiment, where he served with distinction and faithfully until the cessation of hostilities. After the War he took up civil practice of medicine in the Counties of Transylvania and Buncombe, where he spent a long

and arduous life of sixty years in his chosen profession, with credit to himself and honor to the profession. He was for thirty years a member of Buncombe County Medical Society, for which he always entertained a high regard, although his attendance at the meetings was not as regular as some on account of the distance he lived from the city, and his extreme age in these last decades.

Dr. Harris was extremely ethical in his associations with his brethren, and especially was he kind and considerate to the younger men of the profession. He was very painstaking in his diagnoses and most conservative in the administration of therapeutic remedies. He did a great deal of minor surgery, and his obstetrical work stands as a monument to his common sense and his conservative practice of that art. Dr. Harris possessed a personality which was a great asset in his long service to the public. He was alert, wide-awake and energetic, always keeping abreast with the new developments in the science of medicine. He was an indefatigable student, possessing and reading all the standard books of medicine. Withal, he was a courteous gentleman in his associations with his patients and the profession, which made him vastly popular with the public at large. His practice in his vicinity and in the surrounding counties was large and lucrative. He accumulated a good portion of this world's goods and left his family in substantial circumstances. He was married twice, leaving a wife and seven children to mourn his loss. He was intensely human and knew both how to sympathize with and how to approach men in a way that revealed the genuineness of the heart of the man and the physician. Nothing was too small or insignificant in the way of helping a poor suffering mortal, but rather he was ready at all times to answer the call of those in pain and distress. Like the "doctor of the old school," in the saddle on "Old Jess," he went without reward or the hope of reward in the night and in the day, in the heat and in the cold, untl his late declining years gave him warning that he must stop, that he had finished his course. He had kept the faith, and hence his reward rests with him "as he wrapped the drapery of his couch about him" and lay down to pleasant dreams of his faithful service to his fellowmen and to his God.

Suffice it to say that he never brought his conscience to the public mart, but lived himself the truth he taught. "White-souled, pure of heart," he has done the work of a true man. Crown him, honor him, love him!

H. B. Weaver.

William Phineas Horton, M.D.

Address: North Wilkesboro. *Date and place of birth*: February 14, 1867, near Boone, Watauga County, N. C. *Preliminary education*: New River High School, Watauga County; State Normal School. *Professional education*: One year at College of Physicians and Surgeons of Baltimore, Md.; graduated at Baltimore Medical College, Baltimore. *Civil offices held—city, county, state or national*: Superin-

tendent of Public Health for North Wilkesboro; Superintendent of Public Health for Wilkes County; President of Wilkes County Medical Society; Vice-President of the Medical Society of the State of North Carolina; member of the American Health League; United States Pension Examiner; Surgeon for the Watauga & Yadkin River Railroad Co. and Southern Railway Co.; also Surgeon for about twenty other corporations. Wrote papers on various subjects for associational work, and was author of the first paper ever read before the State Medical Society on the spread of disease by houseflies and insanitary closets. *Died*: May 7, 1922.

Dr. Horton wss a self-made man of the type admired by every one who cherishes American ideals. Compelled by his father's death to assume a share of the responsibilities of his family, he not only acquired an education, but became a teacher in the public schools in his county until he was able to take up the study of his chosen profession.

He was a public-spirited man and took an active part in all things religious, educational and civic. He assisted in the erection of several churches and greatly aided in the establishment of better schools—a lasting monument to his memory.

He is survived by his wife and four children: Archie W. Horton of North Wilkesboro, Mrs. Philip D. Robbins of Greensboro, Palmer Horton of High Point, and Miss Annie Horton, student at the Greensboro College for Women.

M. M. King, M.D.

Dr. M. M. King, son of Samuel and Charlotte King, was born in February, 1852, within the limits of the now town of Brevard, N. C. He attended the common and high schools of this immediate vicinity in his youth and young manhood and by his application made sufficient advancement so that in 1874-5 he attended the medical college at Louisville, Ky. Still continuing his studies, he attended the Medical College of Atlanta, Ga., from which he graduated and received his diploma in 1878. He located and practiced his profession in Pickens County, S. C., until 1882. It was during this period that the writer became personally acquainted with Dr. King and his first wife, whose maiden name was Miss Essie Anderson, an attractive, congenial, Christian lady of Pickens, S. C.

Havig married Miss Anderson, Dr. King removed to Brevard, where he continued his profession. To this first marriage was born an only son, W. O. K. King, our present townsman, whose mother died about twenty-five years ago. In May, 1902, Dr. King married Miss Cordia Jolly, of Macon County, N. C. To this happy union were born two daughters, Clara and Edna, and a son, Mitchell, all of whom survive him.

Dr. King was a high-toned Christian gentleman. He was a man of will power and decision, possessing thrifty and frugal habits,

all of which made him a useful and desirable citizen, a faithful and loving husband, a kind and patient father.

In all his domestic and family relations he was most considerate and affectionate, always sympathizing and sacrificing for their comfort. In his professional practice he was sincere, honest and faithful nursing as well as prescribing medicine. He attended the rich and the poor, the white and the colored, all of whom had faith in his treatment. In the successful treatment of some of the well known diseases of his day, viz., typhoid fever, milk sickness, etc., he had no superior among his associate doctors.

He had been failing in health for some months and on Sunday, March 4, 1923, while riding with his family along the highway, which he had so often ridden alone, the Grim Reaper, Death, called him from earth to that undiscovered country, from whose bourne no traveler ever returns.

His funeral was conducted at Brevard Methodist Church by Rev. L. A. Falls and Rev. C. C. Smith in the presence of a large company of loved ones, friends, neighbors, business and professional folks—yea, the colored folks were there, too—to pay the last respects to the time honored physician.

The pall bearers were all his associate doctors, viz., Drs. Wallis, English, Hunt, Summey, Stokes and Wm. and A. E. Lyday. His body was laid to rest in the Gillespie Cemetery beneath a mound of beautiful flowers.

And as his loved ones consigned his body to earth, may we commend the said living ones into the keeping of our Heavenly Father.

T. H. Galloway.

W. H. McCain, M.D.

By John T. Burrus, M.D.

Dr. H. W. McCain, was transferred to the Celestial life October 3, 1922, following an illness of five days, death resulting from haemolytic streptococcic septicemia, which was accidentally inoculated by way of a boil.

Dr. McCain was born in the year 1882 and was the fifth son of Mr. and Mrs. W. J. McCain of Waxhaw, Union County, North Carolina.

Dr. McCain was educated at Waxhaw High School, from which he graduated, spending one year in the Presbyterian College at Clinton, S. C. After leaving there he entered the University of North Carolina, and from this institution received his A.B. degree. He then took two years in medicine at the University of North Carolina, after which he entered Jefferson Medical College of Philadelphia, Pa., receiving his M.D. degree in 1909. Following

this he received an appointment in the Polyclinic Hospital, Philadelphia, completing this service.

In the latter part of 1911 he took up his residence in High Point and began the practice of his profession. He was associated with the late Dr. J. R. Reitzel and remained with him until the death of the latter.

Immediately following this, he became associated with the writer, who lived in close daily contact with him and who appreciated the wonderful and splendid man that he was.

Dr. McCain took up the work in the High Point Hospital and gave to this institution valuable service, untiring and unceasing in every effort for the betterment of the same.

Too much could not be said of Dr. McCain. As a gentleman he was clean, always carrying uppermost in his mind the highest ideals, ever willing and ready to lend a hand to the fallen, and to give an encouraging word to those who were striving to succeed.

His qualifications were the very best. I consider that few men possess the ability to do so many things and do them well as did Dr. McCain, who had few superiors.

This man sought every opportunity to improve himself. He was familiar with classic as well as professional subjects, and his knowledge of State and Nation was superior to that of most men.

As a physician, a clinician, a diagnostician and a surgeon he had few equals, and certainly very few could class themselves as superior.

Energy does not picture him. He was more than energy, and with this he was always pleasing and agreeable.

The silver lining of the darkest clouds was always seen first by him, who never despaired.

In the eight years of association not one misunderstanding existed and certainly not an unkind word was passed between us, and this was due, in a large sense, to the broad vision of Dr. McCain.

Words are inadequate to express the clean life and wonderful qualifications of this man.

The beloved Sam Jones once said—"If you want to know who Sam Jones is, ask Mrs. Sam Jones. If you want to know who a man is, ask his associate in business and daily co-worker."

The resolutions which were passed by the Guilford County Medical Society are as follows:

> *"Resolved,* That in the death of Dr. H. W. McCain, of High Point, on October 3, 1922, the Guilford County Medical Society lost one of its strongest, most capable and

successful members, and the State lost one of its best citizens.

He was not only large physically, but mentally as well, and his great heart made him the cheerful, willing and faithful friend of man, courageous and generous, inclined always to discount any faults of other people.

He was an inveterate worker and always devoted to scientific medicine and surgery, and in all his efforts there was ever a pleasing temper of broad understanding of human nature and a controlling sympathy which guided him in his work.

When those over whose skies clouds were hanging came to Dr. McCain with their troubles, he would, because of his trust in God and his confidence in the future, and his faith in men, make one understand that on the heavenward side of every cloud the sun was shining.

As he struggled with the pathology of age, disease or accident in his patients, even to the point where the river and ocean meet, should they slip away into the Great Beyond, his manner and his words suggested this philosophy: 'He who careth for the sparrow here hath a home for his children over there.'

His departure has filled us with a deep sense of personal loss.

To his sorrowing family we extend our sincere sympathy.

Resolved, That these resolutions be spread upon our records and copies be furnished the Greensboro and High Point papers."

In the loss of Dr. McCain, this splendid man and wonderful associate, and most highly educated and refined gentleman, it is comforting to think of it all in the words herein expressed:

"Green be the turf above thee,
Friend of my better days!
None knew thee but to love thee,
Nor named thee but to praise.

Tears fell, when thou wert dying,
From eyes unused to weep,
And long where thou art lying,
Will tears the cold turf steep.

When hearts whose truth was proven,
Like thine, are laid in earth,
There should a wreath be woven
To tell the world their worth.

While memory bids me weep thee,
Nor thoughts nor words are free,
The grief is fixed too deeply
That mourns a man like three."

—*Fitz-Greene Halleck.*

"His suffering ended with the day,
Yet lived he at its close,
And breathed the long, long night away,
In statue-like repose.

But when the sun in all his state
Illumed the eastern skies,
He passed through glory's morning gate
And walked in Paradise."

—*James Aldrich.*

J. H. McMullan, M.D.

Dr. John Henry McMullan died at the age of seventy-three, at Edenton, N. C., December 10, 1922. He was born in Green County, Virginia, in the year 1849, and was graduated from the University of Maryland in 1876. He practiced his profession in Hertford, N. C., for fifteen years, then removed to Edenton, where he labored until his death.

Resolutions Adopted by the First District Medical Society

We the undersigned, having been appointed a Committee by the First District Medical Society, in session at Edenton, N. C., on March 9, 1923, to draw up resolutoins upon the death of Dr. J. H. McMullan, which occurred on December 10, 1922, desire to record the affection and esteem in which he was held by the medical profession and the people of northeastern North Carolina.

With bare early opportunity for educational advancement, but naturally highly endowed with acute intellect and fundamental knowledge of human nature and human needs, Dr. McMillan lent himself earnestly to the study of his chosen work and pursued it with such energy and discerning judgment as to achieve the foremost rank in the array of the far-famed physicians of this section.

Our first duty is to speak of him as a laborer in the field of medicine. But realizing that to be great in any endeavor one must possess and exercise those virtues that alone make a man conspicious for good deeds, we are prompted to allude to those traits of character and disposition that he possessed, and that brought to him the highest esteem of every community in which he lived, and the loving regard of those to whom for many years he tendered his ministrations.

Capable, industrious, honest, honorable, faithful, courageous, charitable, and gentle!—with these excellent qualities he lit a lamp

of Christian fidelity, of civic purity, and of professional excellence that shall shine on and on, a beacon and a guide to all who follow after.

RICHARD DILLARD, M.D.
G. E. ————, M.D.
JNO. SALIBA, M.D., C. M.

NEILL ARCHIE THOMPSON, M.D.

July 27, 1872, and September 28, 1922, mark the beginning and ending of the life of one of Robeson's most beloved and honored sons, Dr. Neill Archie Thompson of Lumberton, whose tragic death in Fayetteville on the night of September 28, 1922, cast a gloom of sorrow over the community in which he lived, among the people to whom he ministered, who knew him best and loved him most.

Dr. Thompson was born on a farm near Lumberton, on July 27, 1872. He was the son of Neill A. and Julia Smith Thompson, and in early life gave evidence of that bright career which was predestined to be his. After attending the local schools of Robeson County, where the foundation of his education was laid and where he received his preliminary education, he entered Davidson College, where he completed the curriculum of the freshman and sophomore years, also beginning there the study of medicine at the North Carolina Medical College. From there he went to the Maryland Medical College, Baltimore, from which institution he graduated. In later years he took post graduate work in general and operative surgery at the Maryland Post-Graduate School, also at the New York Post-Graduate School of Medicine. He began his professional labors at Chadbourn, Columbus County, staying there for one year, and from Chadbourn going to Whiteville, where he remained for nine years, establishing a large and growing practice. Moving from there to Lumberton, at which place he remained until his death, and where he proved the exception to the rule that "a prophet is not without honor save in his own country," here, as at Whiteville, Dr. Thompson soon had a large general practice. In 1906, realizing the need of this section for a modern hospital for caring for all kinds of cases, especially those demanding surgery, a field in which he had gained an enviable reputation, he established "The Thompson Hospital," an institution of the best and most modern equipment, whose success from its beginning surpassed the hopes of its most ardent supporters, and whose popularity has grown with the years, necessitating its enlargement. In this institution, which he established for the alleviation of suffering, he immortalized his name.

Dr. Thompson belonged to the various organizations of his profession, including Fellowship in the American College of Surgeons, and stood high in the esteem of his fellow practitioners. At the time of his death Dr. Thompson was president of the Planters' Bank and Trust Company of Lumberton. He was also one of the City's aldermen, and took an active interest in all the civic interests

of his community. He was a member of the Masonic order, of which he was a past master, an Odd Fellow, a Pythian, a worthy patron of the Order of the Eastern Star.

Dr. Thompson was twice married, his first wife being Miss Sallie Townsend, of Robeson County, who died in 1906. To this union were born three daughters: Sadie, now Mrs. Claud Watson, of Winston-Salem; Ruth, now Mrs. Thos. J. Stafford, of Nashville, Tenn.; and Julia, a senior at Winthrop College, Rock Hill, S. C. The present Mrs. Thompson was Miss Kate Monroe, of Cumberland County. To this union was born one son, Neill Archie, Jr., who, with his mother, also survives him.

Surely his sudden and untimely going is only another illustration of the truth that "Death loves a shining mark." Though dead his influence still abides and lives in the hearts and lives of the myriads to whom he ministered. The words of the poet seem to us to be applicable to his end:

"Life, we have been good friends
Through pleasant and through cloudy weather.
'Tis hard to part where friends are dear,
Perhaps 'twill cost a sigh or tear.
Then ask me not to say good night,
But, in some brighter clime.
Bid me good morning."

KARL VON RUCK, M.D.

Resolutions adopted by the Buncombe County Medical Society on the death of Dr. Karl von Ruck:

Whereas, It has pleased God in His infinite wisdom to take from our midst our esteemed fellow-member, Karl von Ruck, be it therefore

Resolved, That we, members of the Buncombe County Medical Society in session assembled, do deeply deplore his death; and be it further

Resolved, That a copy of these resolutions be spread upon the minutes of the Society, and that a copy be furnished to the family of the deceased.

THOMPSON FRAZER, M.D.
J. LABRUCE WARD, M.D.
Committee.

Upon motion of Dr. K. P. B. Bonner, the report of the Committee on Obituaries was accepted, to be incorporated in the Transactions, and the Committee was discharged.

ELECTION OF MEMBERS OF NURSES' EXAMINING BOARD

Dr. Cyrus Thompson nominated Dr. J. M. Parrott, to succeed himself. Dr. Oren Moore, of Charlotte, was nominated to succeed Dr. D. A. Stanton, resigned. Both were elected.

THE MEDICAL MAN AND NATIONAL DEFENSE

Major Darius C. Absher, M. C., U. S. A.

(Prepared for Section Medical Veterans and Medical Officers Reserve Corps)

Broadly speaking, the defense of the Nation includes and requires very much more than the employment of arms during war. The term "National Defense" is applicable to a multitude of peace-time activities, such, for example, as disease prevention, physical and mental training, banking, fire protection, road building, development and conservation of natural resources, development of industries, and many other things. In these peace-time activities, no class of people is in position to do more than the medical profession.

Aside from his professional activities, and also by reason of them, the medical man meets, knows, and deals with every class of citizenship. He is listened to, and his views and opinions have great weight in educating the public on every subject.

In a narrow sense, the term "National Defense" means the act of applying force against an enemy during a period of actual war, or the preparation of men and equipment for such employment should the necessity arise. It is chiefly in this narrow sense that the term will be used in this paper.

George Washington's well known advice to "prepare for war in time of peace" is as applicable today as it was a hundred and fifty years ago. In spite of the fact that the whole world, especially the American part of it, hoped that the World War would be the end of all wars, developments in Europe and in other parts of the world are rapidly showing that hope to be an ephemeral dream. Practical-minded men recognize the facts that it always has been man's nature to settle national differences by force of arms, that there is no guarantee that other wars will not occur, and that the best preventive of war is preparedness for defense.

In this paper we shall attempt to discuss briefly:

(1) The medical man's peace-time privilege of bettering his individual standing as an officer; (2) some points regarding his duties in the service; and (3) his peace-time duty, and privilege, of aiding his country to be prepared for defense.

In order to get a correct idea of the general policies for national defense, let us examine the National Defense Act of Congress of June 4, 1920. Under that act the Army of the United States is composed of the Regular Army, the National Guard, and the Organized Reserves. Each of these components has its own Medical Corps.

The peace-time functions of each of these components are as follows:

(a) The Regular Army: First, to provide adequate garrisons in peace and in war for our overseas possessions; second, to provide adequate garrisons for the coast defenses within the continental limits of the United States; third, to provide personnel for the

development and training of the National Guard and the Organized Reserves; and fourth, to provide an effective force, available for emergencies and to serve as a model for the National Guard and the Organized Reserves. The Regular Army is the first component of the Army of the United States in peace and in war.

(b) The National Guard: To provide an effective force available for minor emergencies within the continental limits of the United States. The National Guard is the second component of the Army of the United States in peace and in war.

(c) The Organized Reserve has but one peace-time function, and that is the training of its personnel. It has no other reason for existence, except that, by being organized and trained, its officers would be able to get regiments and divisions mobilized and prepared for action more quickly than we were able to do in 1917, for example, when there was no organized reserve. The Organized Reserve is the third component of the Army of the United States, but it can be employed only in a national emergency declared by Congress.

For the purposes of organization and administration, the United States is divided into nine corps areas. Each corps area contains skeleton organizations for approximately one division of the Regular Army, two divisions of the National Guard, and three divisions of the Organized Reserves. The Reserve divisions are allocated to the States from which they drew their men for the World War.

For the purpose of maintaining the records and training of the organization, each regiment of the National Guard and Organized Reserves has an officer of the Regular Army detailed to it. It is obvious that such work cannot be expected of officers who are on an inactive status.

The Fourth Corps Area is composed of the southeastern states, including North Carolina and Tennessee and all states south of them. Of the three reserve divisions in the Fourth Corps Area, the Eighty-first, or Wildcat Division, is allocated to North Carolina and Tennessee.

The 306th Medical Regiment, which is a part of the Eighty-first Division, is allocated to eastern North Carolina. The term "Medical Regiment" has been adopted since the World War, and, since medical men are probably more interested in it than in other units, its organization will be discussed in more detail.

Medical Regiments are the logical successors to the old Sanitary Trains with which former medical officers are acquainted. A Medical Regiment is composed of a Regimental Headquarters, a Service Company, a Sanitary Battalion of three companies, an Ambulance Battalion of three companies, a Hospital Battalion of three companies, a Laboratory Section, a Medical Supply Section, and a Veterinary Company.

A Colonel of the Medical Corps (or Medical Reserve Corps) is Division Surgeon, and nominally in command of the Medical Reg-

iment. A Lieutenant Colonel is in direct command of the Medical Regiment. Other Officers assigned to the regimental headquarters function as Sanitary Inspector, Division Neuropsychiatrist, Division Urologist, and so on.

The 306th Medical Regiment is at present commanded by Lieutenant Colonel Abram R. Winston, of Franklinton, N. C. Colonel Winston had long experience with the North Carolina National Guard prior to the World War, and he served with credit throughout the late unpleasantness. The second in command is Major James B. Bullitt, Professor of Pathology in the University of North Carolina at Chapel Hill.

Each battalion of a Medical Regiment is commanded by a Major, and each company by a Captain, except the hospital companies, each of which is commanded by a Major.

As nearly as possible, medical officers from the eastern half of North Carolina are assigned to the 306th Medical Regiment. There are, however, a few assigned from western North Carolina and Tennessee. All in all, it is believed that the regiment contains typical representatives of the profession and of the citizenship of our divisional area, and there is ample reason for a feeling of pride in the organization.

A great many Medical Reserve Officers have been notified that they have been placed in the Branch Assignment Group, and some of them are perhaps puzzled to know just what that means. Briefly, it means that they are reserved for assignment to special medical units which are to be organized and controlled directly by the War Department. Such units will consist of General, Base, Evacuation, Surgical, and Station Hospitals, of Hospital Trains, Physical Examining Units, and so on.

The war-time functions of the three components of the Army are as follows: The Regular Army and National Guard act as a first line of defense until the Reserves can be mobilized and prepared for action. The Regular Army now consists of only 125,000 men, and it, together with the National Guard, would amount to a very small force for the defense of so vast a country as ours in a modern war. It is therefore seen that, in any scheme for National Defense, the chief dependence must be upon the Reserves—and they cannot be called out, under the law, except in case of a national emergency so declared by act of Congress.

Now, how can the medical man better his military standing in time of peace? The Act of Congress of June 4, 1920, provides that any officer of the World War, if his military record is satisfactory, may be commissioned in the Officers' Reserve Corps in the highest grade held during the war, *provided* application is made before November 11, 1923. That act also provides that qualified graduates in medicine who have had no previous military service may be appointed as First Lieutenants in the Medical Officers' Reserve Corps. After November 11, 1923, all appointments will be made in the lowest grade.

A commissioned officer of the Medical Reserve Corps can qualify for promotion every three years by taking correspondence courses and attending summer training camps. While attending training camps, reserve officers receive the full pay of their grade and transportation to and from the place of training.

The Medical Reserve Corps at the present time contains approximately 11,000 officers, and among their number are many of the leading physicians and surgeons of the nation. In other words, it is an honor, and a privilege not to be neglected, to be numbered among them. In addition, it is a significant fact that other branches of the Reserve are becoming so large and important that the holding of a commission in the Medical Officers' Reserve Corps gives to a medical man a professional advantage over his medical brethren in the local community.

The war-time duties of a medical officer are varied. For the benefit of those who are not veterans it may be said that service in a base hospital or general hospital does not differ very greatly from service in a civilian hospital of like size, except in the few instances where a medical officer is made adjutant, mess officer, or detachment commander. Service with a line regiment, while not demanding the highly technical knowledge which a professional man does not want to let "go to rust," offers splendid opportunities for the study of men and character, and a world of professional experience is to be here acquired if one seeks it.

With the Medical Regiment the medical man has his most desirable opportunity for a varied experience. It is here that he has his best opportunity to exercise command, and in campaign he gets close enough to the front lines to know and see all the details. Though he is not as close to the firing lines as the medical officers on duty with line regiments, he is somewhat compensated by having more detailed professional work to do in caring for the wounded as they are carried back by the litter bearers of the Sanitary Companies, or transported further back by the Ambulance Companies, or still further back where they are operated on or put to bed, or both, by the Hospital Companies.

The duty of selecting men physically fit for military service, whether in time of peace or in time of war, devolves upon the medical men. When this duty is added to those already mentioned it is readily understood why efficient armies cannot be quickly formed, and why they cannot function in modern warfare, with the medical man. The line likes to call us non-combatant, but the late War taught everybody that the medical man must of necessity face as much danger as any other officer, and that, in spite of the fact that he has not the benefit of the relief afforded by combat, he has the courage to face it.

The medical man is not privileged to fight unless it be in the defense of a patient, or of himself, when actually attacked.

In conclusion, I want to quote the following from a recent paper by Major N. W. Sharpe, Med. O. R. C., of St. Louis, Mo.:

"It is probably true that, during the relative quiescence of peace, it is more difficult to exemplify in the daily life the serene light of a lofty patriotism than during the furnace heat testing of a stressful conflict. But to your patriotism appeal is made, and to your clarified vision it is submitted that national preparedness in the day of safety against the coming day of danger is essentially and basically sound, both in abstract principle and in concrete practice; it is submitted that the Congress was wise in authorizing, and the War Department wise in developing, the Organized Reserves; it is submitted that we owe a substantial indebtedness to our late allies of the World War who grimly and courageously and doggedly maintained the status quo while we expended more than a year of invaluable time mobilizing, organizing, training and equipping our forces; it is submitted that our own people were grievously burdened by needlessly huge economic and financial hardships; it is submitted that the major portion of distress to our allies and distress to our Fatherland would have been avoided if we had had in dependable activation a competent national defense policy and a properly organized reserve; it is submitted that the fast multiplying complexities and the increasingly destructive and deadly outworkings of present and future warfare warrant the intensive consideration of every medical man; and, finally, it is submitted that it is a personal privilege and a patriotic service that every qualified and eligible medical man file application for commission in the Medical Reserve Corps of the Army of the United States. The challenge is that the high traditions of sacrifice and service historically exemplified by the medical profession must not be abated. The challenge is: meet your patriotic responsibility, meet it squarely, and meet it now."

Lt. Col. Jos. H. Way:

I want to thank Major Absher for his courtesy and kindness in coming from Knoxville to present this subject, and to tell him how all of us, personally, officially and collectively, appreciate it and appreciate him. We thank him for the paper and for coming.

Adjourned.

THURSDAY, APRIL 19, 12:00 M.

President Long in the Chair:

The Secretary reported the action of the House of Delegates in the election of officers and committees, which was approved.

The Chair requested Major James B. Bullitt and Dr. Carl V. Reynolds to escort the newly elected President to the chair.

President Long:

I assure you that it gives me very great pleasure to introduce Dr. McGougan as my successor. Before retiring from the chair I want to say that I appreciate all the courtesies and the consideration extended to me by the general sessions and the House of Dele-

gates. I feel that this has been a very successful meeting, and perhaps no part of it more successful than the session just closing. I now have the honor of retiring in favor of your newly elected President, Dr. J. Vance McGougan, of Fayetteville.

Dr. McGougan:

I thank you most heartily for this honor. I presume that every real physician has some ambition in life, and I shall admit that when I was somewhat younger than I am now I thought that, by hard work, doing what I could for the Society, keeping my mouth shut and attending to my own business, perhaps some day I might be president of this body. About two years ago I had a sudden outburst of political ambition—why I do not know, unless I inherited some of it from my friend Dr. Thompson—and before I knew very much about it I was representing my District in the Senate in Raleigh. I have no apologies to make, for I enjoyed it, although it was a sacrifice. But I am going to be frank with you, my friends, when I tell you that, as a physician, I would rather be President of this body than to be Governor of North Carolina.

There are a great many things that I might say, but I shall not take up your time. This is not my Society, this is not your Society; it is our Society, and with your help I hope to make the next meeting one of the best and biggest in its history.

Major D. C. Absher, M. C., U. S. Army:

I do not want to take up much of your time right at this particular point, because I know everybody is ready to go home, but there are two or three points which I would like to call to the attention of the members present. The first thing I want to mention is that the retiring President of this Society was a lieutenant-colonel of the United States Army during the World War. The second is that the incoming president is the Surgeon-General of the North Carolina National Guard. So, you see, the military services are not being neglected by the Medical Society of the State of North Carolina. The new section which has just closed its first session, the Section of Medical Veterans and Medical Officers' Reserve Corps, is, so far as I know, the first section of the kind to be organized by any state medical society in the United States. Its organization is due to the interest, energy and foresight of Lieutenant-Colonels John Wesley Long and Joseph H. Way. With their permission, as soon as I get back to Knoxville I want to send a copy of the program to the Surgeon-General in Washington, with an appropriate report of the meeting of the Section.

Upon motion of Dr. Cyrus Thompson, of Jacksonville, the following resolution was adopted:

Resolved, That the thanks of this Society are due and are hereby tendered to the Editor and Manager of Southern Medicine and Surgery for valuable services rendered the Society by way of publicity during the year, and especially for valuable services ren-

dered in the matter of registration, information, and the like, during the present session.

Dr. Thompson: Dr. Townsend, the Editor and Manager of Southern Medicine and Surgery, has done us a very valuable service. He has furnished his own stenographer to attend to the registration, and has himself been a sort of information bureau. His journal during the year has done valuable work in giving publicity to matters concerning the Society. I am not asking the Society to indorse his journal, or anything like that, but do give it as a sort of patriarchal opinion that we should do for him what we can.

Dr. J. Howell Way, Waynesville: I wish to second the motion for the adoption of the resolution, and to express my personal appreciation for the very constructive and helpful support that this journal has given to the Society and to the individual physician. It is with great pleasure that I second the resolution, and, in doing so, commend the journal to the doctors of North Carolina.

Motion unanimously carried.

Dr. Cyrus Thompson:

We are getting down pretty close to the end of a perfect day in a perfect place. I am not very resolute, and I am not a great resolutioner, but I do want to make a motion, somewhat in the form of a resolution. The Medical Society of the State of North Carolina is always courteously and handsomely entertained, wherever it goes, but we never have been entertained anywhere in the State better than we are entertained at Asheville. I remember how some years ago, over at Battery Park, the time ran on so pleasantly that some other gentleman and I did not know it was bedtime until a quarter past four one morning and until a quarter of five the next morning.

Arrangements were made for us to meet this year at Kenilworth. I was sad to see the desecration going on around Battery Park, but here at Kenilworth we are on a sort of Zion's hill, whatever desecration may be going on elsewhere. I think, sir, we are greatly indebted to the local committee and profession for the entertainment we have had, and also to the management of this hotel. And I would say, also, that the thanks of this Society should be tendered to what we used to call the weaker vessel, but now the stronger arm, the great and good women of North Carolina.

Dr. Thompson's motion was seconded by Dr. M. L. Townsend, and unanimously carried.

The Society then adjourned sine die.

MINUTES OF THE HOUSE OF DELEGATES

Tuesday, April 17th, 11:00 A. M.

The House of Delegates was called to order by the President, Dr. J. W. Long, and the roll was called by the Secretary-Treasurer, Dr. L. B. McBrayer. The following delegates were present:

Alamance ---------- Dr. C. W. McPherson
Alleghany ----------
Anson ---------- Dr. C. I. Allen
Ashe ----------
Avery ---------- Dr. W. C. Tate
Beaufort ----------
Bertie ----------
Bladen ----------
Brunswick ----------
Buncombe, Drs. Paul H. Ringer, Carl V. Reynolds, Wm. J. Hunnicutt, H. T. Frazer.
Burke ----------
Cabarrus ---------- Dr. J. A. Patterson
Caldwell ----------
Carteret ----------
Caswell ----------
Catawba ----------
Chatham ----------
Cherokee ----------
Chowan-Perquimans ---------- Dr. H. M. S. Cason
Cleveland ----------
Columbus ---------- Dr. Floyd Johnson
Craven ----------
Cumberland ---------- Dr. W. T. Rainey
Currituck ----------
Davidson ---------- Dr. D. J. Hill
Davie ----------
Duplin ---------- Dr. J. W. Carroll
Durham-Orange ----------
Edgecombe ---------- Dr. J. M. Baker
Forsyth ---------- Dr. A. dtT. Valk
Franklin ----------
Gaston ---------- Dr. D. A. Garrison
Gates ----------
Graham ----------
Granville ----------
Greene ----------
Guilford ---------- Drs. J. T. Burrus, J. T. J. Battle, C. W. Banner
Halifax ----------
Harnett ---------- Dr. W. P. Holt
Haywood ---------- Dr. J. R. McCracken
Henderson-Polk ---------- Dr. J. S. Brown

Hertford ----------
Hoke ----------Dr. L. B. McBrayer
Hyde ----------
Iredell-Alexander ----------Dr. Ross S. McElwee
Jackson ----------
Johnston ----------
Jones ----------
Lee ----------Dr. J. P. Munroe
Lenoir ----------Dr. J. M. Parrott
Lincoln ----------Dr. L. A. Crowell
Macon-Clay ----------
Madison ----------
Martin ----------Dr. B. L. Long
McDowell ----------
Mecklenburg, Drs. R. F. Leinbach, I. W. Faison, J. Q. Myers, James R Alexander.
Mitchell-Watauga ----------Dr. C. A. Peterson
Montgomery ----------
Moore ----------Dr. J. S. Milliken
Nash ----------
New Hanover ----------Drs. J. G. Murphy, E. S. Bulluck
Northampton ----------
Onslow ----------Dr. Cyrus Thompson
Pamlico ----------
Pasquotank-Camden-Dare ----------
Pender ----------
Person ----------Dr. B. E. Love
Pitt ----------Dr. Chas. O'H. Laughinghouse
Randolph ----------Dr. C. A. Hayworth
Richmond ----------
Robeson ----------Dr. J. A. Martin
Rockingham ----------Dr. J. B. Ray
Rowan ----------Dr. C. M. Van Poole
Rutherford ----------
Sampson ----------Dr. E. T. Hollingsworth
Scotland ----------
Stanly ----------Dr. J. N. Anderson
Stokes ----------
Surry ----------Dr. E. C. Ashby
Swain ----------
Transylvania ----------
Union ----------
Vance ----------
Wake ----------Drs. V. M. Hicks, T. M. Jordan, C. O. Abernathy
Warren ----------
Washington-Tyrrell ----------Dr. J. L. Spruill
Wayne ----------Dr. W. H. Smith
Wilkes ----------
Wilson ----------Dr. Ben H. Hackney
Yadkin ----------
Yancey ----------

The President presented the following message to the House of Delegates:

PRESIDENT'S MESSAGE

Members of the House of Delegates:

The House of Delegates has an interesting meeting, with much work to do for this session. Through your kindness and that of the general meeting I have the responsible duty of submitting certain suggestions for your consideration.

The following changes in the Constitution are recommended:

1. That provision be made for the election of a President-Elect. To do this article VIII, Sec. 1, will have to be changed. A number of larger medical bodies have adopted the plan of a President-Elect and find it to work very satisfactorily. Had I known a year ahead of my election as President, I could certainly have done much more effective work than I have. It has taken a great deal of my time during the past year to learn just what is expected of the President.

2. Article IV, Sec. 6, provides that Honorary Fellows shall consist of "such physicians as have been members of this Society continuously for thirty years." This makes it possible for a man to be made an Honorary Fellow who is not in good standing in his county society. True, according to the Constitution and By-Laws a man must be a member of his county society before he can be a member of the State Society, but in a number of instances a man will belong to both societies for many years and then for one reason or another drop out of his county society, ceasing to be in good standing. No one feels like taking action against him, since he has perhaps done nothing more than failed to pay his dues. A recent case in point came up before the Guilford County Society in which a man was proposed for Honorary Fellowship in that Society who was already an Honorary Fellow in the State Society. The Guilford County Society refused to make him an Honorary Fellow because he was not in good standing.

The following changes in the By-Laws are recommended:

Chapter III, Sec. 4, relating to the time occupied in the reading of papers and addresses, should provide that guests who are invited to deliver the principal addresses on medicine and surgery shall not be restricted to twenty minutes.

Chapter IV, Sec. 7, relating to the reading of voluntary papers, says: "No voluntary paper shall be placed upon the annual program, or be heard in the Association, which has not first been read in the county society of which the author is a member." This seems to be a restriction that, if carried out, would hinder the scientific work of the Society.

Chapter VI, Sec. 2, relating to the elevation of a Vice-President to the Presidency in the event of the death or the removal of

the President, gives the Council the right to select any one of the Vice-Presidents it may be pleased to choose. It would appear that the Vice-Presidents should succeed to the Presidency in the order of their rank.

Chapter IV, Sec. 11, says: "From the Presidents of such district societies shall be chosen the Vice-Presidents of this Society." This appears to be undemocratic and certainly does not apply to any other office within the Society.

There are certain other sections in the By-Laws which should be revised. For instance, Chapter X, Sec. 1, says that the President shall appoint the chairmen of sections. Within the last few years the custom has arisen of the sections' electing their own chairmen. This takes it out of the hands of the President. This matter should be adjusted and the By-Laws and practice made to harmonize. The same Section should be revised as to the names of the various sections.

Reports to Life Insurance Companies, et cetera:

In view of the fact that physicians and hospitals receive frequent requests from individuals and from corporations and other companies for reports on patients, we recommend that a resolution be adopted declaring it the sense of this Society that physicians and hospitals may properly charge for such service.

Liaison Committee:

If the views expressed in the Presidential Address this year be favorably considered by the House of Delegates, it is recommended that a liaison committee be appointed with full power to act and to co-operate with like committees from the other professional organizations in the State.

Woman's Auxiliary:

It is recommended that the House of Delegates consider the establishment of certain new sections and at the same time revise some of those now in existence. This matter was dwelt upon at length in my Presidential Address. Should this phase of the question be referred to a committee the details will be thoroughly gone into.

In closing, let me say that the one thought which your President has had in mind during the past year, and in the messages which he has brought both to the General Meeting and the House of Delegates, is that we may develop and enlarge and progress.

The following committee was appointed to consider and report upon the recommendations of the President to the House of Delegates: Drs. C. M. Van Poole, D. A. Garrison, H. M. S. Cason, Paul H. Ringer, and C. W. Banner.

The President's Address having been referred to the House of Delegates, the following committee was appointed to confer upon

it and report to the House of Delegates at a later session: Drs. J. Howell Way, John Q. Myers, and Charles O'H. Laughinghouse.

Upon motion of Dr. J. T. Burrus, the Committee on Recommendations of the President was asked to report before the close of the session upon that part of the President's message recommending the organization of a Woman's Auxiliary to the Society.

REPORT OF COMMITTEE ON PUBLIC HEALTH ADMINISTRATION*

Dr. J. Howell Way, Chairman:

It was the pleasure of this Committee‡ last year to submit a report defining the term "State Medicine," which report was discussed at length. On motion, a resolution was adopted that the report lie upon the table for one year, being sent in the meantime to the component county societies, with a request that the societies discuss it and instruct their delegates how to vote. This was regarded at that time by the Committee, and is still regarded, as a most vital and important matter. The Committee begs leave to give the same report as last year, and requests that it be acted upon at this session.

(Dr. Way then read the report of the Committe as presented at the 1922 session, Transactions, pages 382-385.)

Paragraph 6 of the resolution defining the term "State Medicine" and Paragraph 1 of the resolution defining the position of the Society with respect to the various activities of "State Medicine" were amended to include those in need of orthopedic treatment. The report was then adopted.

The report, as adopted, follows:

RESOLUTION DEFINING THE TERM "STATE MEDICINE"

Whereas, the term "State Medicine" has a literal meaning so general as to include public practices and policies, some of which are desirable and some of which are objectionable, and

Whereas, the term "State Medicine" has been and is being used frequently and extensively with confused and without established meaning, and

Whereas, such use of the term has resulted in and continues to produce much misunderstanding, controversy, and antagonism, both within the profession and between the profession and the public, now, therefore, be it

*Committee: President North Carolina State Board of Health, ex officio, Dr. J. Howell Way, Waynesville; President Board of Medical Examiners, ex officio, Dr. J. Gerald Murphy, Wilmington; President North Carolina Hospital Association, ex officio, Dr. L. A. Crowell, Lincolnton.

‡Committee (1922): J. Howell Way, President North Carolina State Board of Health; Wm. P. Holt, President Board of Medical Examiners; Jno. A. Williams, President North Carolina Hospital Association.

Resolved, by the House of Delegates of the Medical Society of the State of North Carolina that to prevent further loose use of the term with resulting misunderstandings and controversy and to clarify and facilitate intelligent discussion and action, "State Medicine" be and is hereby defined as follows:

"State Medicine" is any practice or policy provided for by the legislative acts of a State which has to do with the prevention or treatment of disease, and which may include any of the following:

1. Legislation which determines who shall be permitted and who shall not be permitted to treat disease and prescribes the conditions under which a person may practice medicine;

2. Legislation which provides for the education of the general public in matters of personal and public hygiene, giving to the people a higher appreciation of the value and use of medical science through printed matter, addresses, moving pictures, visiting nurses and other means of proved educational value;

3. Legislation which provides public laboratories for assisting the profession in the diagnosis of specimens of pathological material and for providing the profession with various biological products of preventive and curative value;

4. Legislation which provides for immunization by vaccines and sera of the general public against smallpox, typhoid, and other infectious diseases for which approved vaccines and sera are available;

5. Legislation which provides for the reporting of births, deaths, and communicable diseases and prescribes measures for the restriction of the spread of contagion;

6. Legislation which provides institutional treatment and care for the delinquent, the defective and the diseased, including institutions for the feeble-minded, the deaf and the blind, the psychopathic and insane, the morally delinquent, the tuberculous, and those in need of orthopedic treatment;

7. Legislation which provides for the physical examination of school children and the detection of those which are retarded and which retard their classmates by defects so frequent among the school population as to have appropriately acquired the term "common defects of school children," to the practical end that the finding of such defects will stimulate an interest in both local profession and public that will result in their correction;

8. Legislation which provides dispensaries for the examination and treatment of diseases of such prevalence and far-reaching effect on the public health as to constitute large and unnecessary handicaps to social progress, as, for example, dispensaries for venereal diseases, and dispensaries in certain sections of the country for the treatment of trachoma and hookworm disease;

9. Legislation which provides for health insurance, especially as practiced in England, and which provides for panels of physicians who are paid out of public funds, and at rates fixed by the State.

RESOLUTION DEFINING POSITION OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA WITH RESPECT TO THE VARIOUS ACTIVITIES OF "STATE MEDICINE" AS DEFINED BY THIS SOCIETY

Resolved, That the Medical Society of the State of North Carolina is emphatically opposed to health insurance as exemplified by its practice in England and on the Continent of Europe;

Resolved further, That this Society regards the treatment of disease at public expense as a practice that needs to be well considered and carefully defined, but realizes that there are certain conditions which not only justify but demand the administration of remedial and curative measures and agencies, and among such conditions recognizes and approves the following:

1. The institutional treatment of the psychopathic, the insane, the feeble-minded, the morally delinquent, the deaf and blind, the tuberculous, and those in need of orthopedic treatment;

2. The treatment through public dispensaries of diseases constituting large social handicaps where the treatment of such diseases is a necessary part of their prevention, as illustrated in trachoma, hookworm disease, malaria, and venereal diseases;

3. The immunization of the general public against infectious diseases through the administration of vaccines and sera;

4. The treatment of public school children for those defects which exist as a bar to educational progress not only for the afflicted child but for the classes in which it recites;

Resolved further, That it is the sense of this House of Delegates that, in providing for the treatment of groups "2," "3," and "4" as above stated, the conditions and terms of such treatment should be submitted by those proposing it to the officers and, where possible, to the local medical society or, where there is no local medical society, to the majority of the legal practioners of regular medicine for their consideration and approval.

COMMITTEE ON THE MENACE OF DRUG ADDICTION*

No report. The Committee was discharged.

REPORT OF COMMITTEE TO CONSIDER FOUR-YEAR MEDICAL SCHOOL TO BE ESTABLISHED BY THE STATE UNIVERSITY

The following report was read by Dr. I. W. Faison, Chairman, and, upon motion, was accepted:

Upon the request of Dr. H. W. Chase, President of the Univer-

*Committee: Dr. F. M. Hanes, Chairman, Winston-Salem; Dr. L. E. Bisch, Asheville; Dr. J. M. Manning, Durham.

sity of North Carolina, a Committee consisting of Drs. I. W. Faison, Chairman, Charlotte; A. J. Crowell, Charlotte; J. T. J. Battle, Greensboro; J. H. Shuford, Hickory; C. M. Van Poole, Salisbury; E. T. Dickinson, Wilson; L. B. McBrayer, Sanatorium; W. L. Dunn, Asheville; H. H. Briggs, Asheville; David T. Tayloe, Washington; J. F. Highsmith, Fayetteville; J. V. McGougan, Fayetteville; Foy Roberson, Durham; Fred W. Hanes, Winston-Salem; W. P. Holt, Duke; J. Howell Way, Waynesville; E. J. Wood, Wilmington; E. M. McIver, Jonesboro; Cyrus Thompson, Jacksonville; W. F. Hargrove, Kinston; J. M. Parrott, Kinston; C. O'H. Laughinghouse, Greenville; Ivan P. Battle, Rocky Mount; Thos. E. Anderson, Statesville; A. C. Everett, Rockingham; Peter John, Laurinburg; W. H. Cobb, Goldsboro; R. H. Lewis, W. S. Rankin and Hubert A. Royster, Raleigh, was appointed by Dr. J. Wesley Long, President of the Medical Society of the State of North Carolina to investigate and recommend whether or not a Class A four-year medical school should be established in connection with the State University. I called the Committee to meet at the Yarborough Hotel, in Raleigh, October 10, 1922. All the members of the Committee were present except six. After varied and long discussions, pro and con, we voted unanimously to recommend the establishment of a Class A four-year graduating school.

The question of location was then discussed and a vote taken to establish it at the University, by a large majority. With a vote to reconsider and with a fuller discussion, a vote was taken to eliminate the word "University," and to recommend, if such a school should be established, that wherever so established all four years should be at the same place.

Some time after that the Trustees of the University were called together in Raleigh to decide about the school, and that day voted to postpone action. A delegation from Charlotte asked to be heard. After a free discussion, the Trustees changed their position and agreed to recommend to the Legislature the establishing of the school at once, with an appropriation sufficient to put it on its feet. A few days later they met again for the purpose of selecting the place to locate the school. Charlotte, Durham, Greensboro and Raleigh contended for the location of the school at one of these places,—and the Trustees voted to refer the matter to the Legislature. The report from Maxwell and Company that the State finances would show a $5,000,000 deficit struck the Legislature with utter dismay, and with the invisable influence of the University people the whole matter was laid away in a deadly sleep. I think that if the doctors in North Carolina had done their full duty and demanded what I believe to be one of the State's greatest needs, the school would have been established, and at the best place. I predict that not far in the future the school will be.

Upon motion of Dr. Cyrus Thompson, the Committee was instructed to continue its activities and report at the next annual meeting of the Society.

The Committee on the Recommendations of the President made the following partial report:

Your Committee recommends the organization of a Woman's Auxiliary to Medical Society of the State of North Carolina, with the appointment of Mrs. P. P. McCain, of Sanatorium, as temporary chairman, and recommend that the ladies meet to organize on Wednesday, April 18th, at 10:30 A. M.

C. M. Van Poole, Chairman.
H. M. S. Cason,
D. A. Garrison,
Paul H. Ringer,
C. W. Banner, Secretary.

The recommendation of the Committee was accepted and its partial report adopted (Dr. I. W. Faison voting against it).

ANNUAL REPORT OF THE SECRETARY-TREASURER OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

I beg to hand you herewith my annual report as Secretary-Treasurer:

I took over the office for Dr. Benj. K. Hays when he went into the Service, shortly after the Pinehurst meeting in 1918, and discharged the duties of the office to the best of my ability in his stead until the Pinehurst meeting in 1921, when the Society saw fit to elect me Secretary-Treasurer.

MEMBERSHIP

The largest number of members the Society records had ever shown to that time was in 1917, to wit: 1,271. For the year 1922 the records show 1,557, an increase of 300 members, and *pari paussu,* an increase in income of about $900.

HONORARY FELLOWS

A careful study of the records of each member as shown on the Treasurer's book has been made, and all those who would be Honorary Fellows but for the lapse in payment of dues for a few years have been advised, and many of them have taken advantage of the opportunity and become Honorary Fellows. Likewise any who may become Honorary Fellows in the next few years but for minor lapses have been advised, and many have made it possible to correct the records. In accordance with the rule, but not in accordance with the Constitution and By-Laws (see Article IV, Section 6, of the Constitution), by which a member who has been in continuous good standing for thirty years becomes an Honorary Fellow, we have added nine to the list this year, as follows: Drs. E. L. Cox, Jacksonville; Charles Daligny, Troy; Wm. R. Goley, Graham; Chas. A. Julian, Thomasville; H. F. Long, Statesville; J.

B. Shamburger, Star; M. L. Stevens, Asheville, and Edward F. Strickland, Bethania.

The actual work of the office of Secretary-Treasurer changes with the times. Time was when a doctor rode horseback and was glad to find roads that could be traveled by a horse with no other impedimenta than the doctor astride his back and the saddle pockets of ye days that are gone. This was followed by the buggy, and now we have the automobile. And so it has been with the Secretary's office. Time was when such a thing as a reporter for the meetings had never been heard of—the Secretary took the minutes in longhand, the papers were not written on a typewriter, and the Secretary conducted the correspondence of his office in longhand. Now it takes three reporters to handle the meeting, and we sometimes need a fourth, and usually pay them some several hundred dollars, perhaps more than the total income of the Society three decades ago.

The other office work has probably increased in the same ratio. We have sent out during the year 10,000 multigraph letters and 1,799 personal letters. Most of the multigraph letters were prepared by the President or at his suggestion. No doubt much more of this work could be done to the great advantage of the Society and its members.

We have notified all officers and committees of their election or appointment, and we have notified all officers and committees that are supposed to report to this session. We have sent transcripts of all resolutions to organizations or persons mentioned therein. We mailed to every county society a copy of the report of the Committee on Public Health Administration, giving definition of "State Medicine," as instructed by the House of Delegates (see pages 382-385, Transactions 1922).

We have endeavored in every way possible to help the secretaries secure a hundred per cent membership in every county. We have written many letters to delinquents and President Long has done likewise. Occasionally we erred, but we have always been willing to correct such error, and the three hundred additional members will no doubt condone, at least to some extent, for the same. The county societies have always been kind and ready to forgive such errors when explanations were made.

TREASURER'S BOOK

The Treasurer's book is entirely satisfactory from every standpoint, but it is pretty nearly used up and the Society will have to secure a new one at an early date. Perhaps a loose leaf ledger on the same general plan would be better. This Treasurer's book is the most important piece of property the Society owns, for in it alone are the original and permanent records of membership.

STATE LIBRARY FILE OF TRANSACTIONS

The State Historical Commission stated to the wonderfully efficient Secretary of our State Board of Medical Examiners, Dr. K. P. B. Bonner, that the only thing they had on history of medicine and the medical profession in North Carolina was the old records of the Board of Medical Examiners that Dr. Bonner was then filing with them. When Dr. John A. Ferrell, of North Carolina and New York, was Secretary of this Society he secured from his uncle, Dr. Walter C. Murphy, now of Washington, D. C., but a North Carolinian for many years, a gift of a complete set of the annual Transactions of this Society from its beginning up to that period, 1914. Dr. Ferrell had these volumes nicely bound in a dark morocco leather and these were deposited in the State Library. These have been added to and are complete up to but not including 1922.

The library of the University of North Carolina has a complete set of the Transactions. Dr. J. Howell Way and two or three other physicians have complete sets. These, together with the records of the State Board of Medical Examiners, are all there is recorded of the history of medicine in North Carolina, and likewise of the men who have made this history. Are we interested in the history our predecessors have made? Are we interested in the history we are making today? If so, we should see that it is recorded and preserved.

PROGRAMS

As a matter of economy we did not send out preliminary programs for one or two years. Many of the doctors spoke about it and wanted the preliminary programs sent out. Some suggested that it would likely increase the attendance, for the reason that when a doctor saw things on the program in which he was interested he would be the more likely to attend. Others thought it was good advertising for the Society, and so we have mailed them to every white physician for the last few years, usually about one week before the meeting. We have been able to save enough on printing the programs to take care of the additional expense of mailing them out by getting the work done by Southern Medicine and Surgery, for which we are grateful.

REDUCED RATES

The Southeastern Passenger Association, through Mr. W. H. Howard, of Atlanta, was kind enough to give us a one and one-half fare rate on the certificate plan to this meeting, provided as many as two hundred and fifty bought straight fare tickets coming and took a certificate therefor. So it remains to be seen whether or not the one-half fare will be effective returning.

STATUS OF MEMBERSHIP

We now have 1,450 members in good standing, from 92 counties, against 1,176 paid members from 96 counties at this time last year. We have as usual made every endeavor that could occur to us to get a report from every county, for example, letter and report blanks in November, 1922; several letters from the latter part of January to early April, and then telegrams. We are glad to say, however, that the secretaries and membership are greatly improved in regard to paying their dues promptly and, if all officers persevere, it is our opinion that most of them will soon develop the habit.

OTHER ORGANIZATIONS

In accordance with sections 7 and 8 of Report on the President's Address (page 398, Transactions 1922), I sent a statement to all the organizations mentioned therein, save the North Carolina Hospital Association, to which it was not applicable, but to date have only had reply from the State Board of Medical Examiners, who paid in full.

FINANCES

The report of the fiscal transactions of this office are appended hereto, with certificate from Page Trust Company, Aberdeen, showing balance on deposit with them, which agrees with our books.

OUR VOLUME OF TRANSACTIONS

The scientific papers read before this Society are increasing in number, in interest and importance. No more can it be said that the "papers presented before this Society are lacking in interest to the scientifically trained physician;" *per contra,* we are hearing it said that "no physician who is not trained in latter-day laboratory methods and who does not have access to a well equipped laboratory can secure a place on a section program." This is no doubt slightly exaggerated, even as the other statement quoted was. The doings of the Society are also increasing year by year. We trust that both the things mentioned will continue to increase. This gives more reading matter to the volume and therefore increases the cost of publication. Notwithstanding this, we have, by getting the printer to put more lines on a page and more words to a line, increased the amount of reading matter on a page by forty per cent and in that way reduced appreciably the size and cost of the volume, so that the 1922 volume remains about the size of previous volumes and cost slightly less. From correspondence in our files, we think a slight decrease can be had in the cost of printing a similar volume for 1923.

OUR PRESIDENT

It has been a pleasure and an inspiration to work with our President, Dr. J. W. Long, during the past year. He has devoted

his physical self, his mental self and his spiritual self to the good and upbuilding of our profession and our Society during his term of office, and this splendid work will, in my opinion, leave its impress for good for all time. I thank him for his most hearty co-operation and support in my efforts to discharge faithfully and well the duties of my office.

On account of the favorable report of the Committee on Establishment of a State Medical Journal in lieu of a Volume of Tranactions, which will be presented to you, and in order that both the House of Delegates and myself may be able to give due consideration to the report without any embarrassment, I herewith tender my resignation as Secretary-Treasurer.

I take this occasion to thank the Society for the privilege of serving it in the office of Secretary-Treasurer, and also to express my appreciation for the many honors bestowed upon me, and to pledge to this Society, our profession and each individual member my continued loyalty, service and devotion forever.

Respectfully submitted,
L. B. McBrayer, M.D., F. A. C. P.,
Secretary-Treasurer.

FINANCIAL STATEMENT

April 22, 1922, to April 14, 1923

RECEIPTS

Balance April 22, 1922, as per statement in Transactions, page 391	$1,714.48
Interest on $1,500, 4-28-22 to 12-14-22	32.00
Receipts from printing transactions of the Board of Medical Examiners	60.26
Transferred from savings account	1,500.00
Borrowed from Page Trust Co., 12-16-22, to meet balance of payment due for printing Transactions for 1922	1,500.00
Dues Collected	4,802.00
Total receipts	$9,608.74

DISBURSEMENTS

Check No. 121	Expense Winston-Salem meeting	$ 65.15
" " 122	Page Trust Co., transferred to savings	1,500.00
" " 123	Western Union Telegraph Co., April acct.	18.33
" " 124	Miss Mary Robinson, reporter	79.26
" " 125	Southern Medicine and Surgery, program 1922	76.00
" " 126	Dr. L. B. McBrayer, expense Winston-Salem meeting	1.66
" " 127	Miss Hilda Jacobs, reporter	81.20
" " 128	Western Union Telegraph Co., May acct.	2.54

"	"	129—Dr. A. F. Toole, refund of dues	3.00
"	"	130—Presbyterian Standard Publishing Co., stationery	126.51
"	"	131—Western Union Telegraph Co., June acct.	.91
"	"	132—Mrs. J. C. Cheek, reporter	65.90
"	"	133—Southern Stamp & Stationery Co., rubber stamp	.85
"	"	134—Miss Mary Robinson, reporter	162.45
"	"	135—Western Union Telegraph Co., July acct.	3.94
"	"	136—Mitchell Printing Co., binding Transactions	22.50
"	"	137—Brown-Morrison Co., cuts for Transactions	88.00
"	"	138—Western Union Telegraph Co., September account	.41
"	"	139—Brown-Morrison Co., leaflets and halftones	24.00
"	"	140—N. C. Sanatorium, stamps for mailing Transactions	120.00
"	"	141—Page Trust Co., interest on $1,500.00, four months	30.30
"	"	142—Brown-Morrison Co., printing 1922 Transactions	2,989.00
"	"	143—Brown-Morrison Co., freight on 1922 Transactions	54.90
"	"	144—Dr. C. Daligny, refund of dues	3.00
"	"	145—Brown-Morrison Co., 3,000 letterheads	17.90
"	"	146—Dr. R. C. Sample, refund of dues	3.00
"	"	147—Dr. R. P. Beckwith, refund excess dues	2.00
"	"	148—Dr. T. L. Moorefield, refund of dues	3.00
"	"	149—Dr. W. A. Rogers, refund of dues	3.00
"	"	150—Dr. Stuart Mann, refund of dues	3.00
"	"	151—Dr. J. A. Martin, refund of dues	3.00
"	"	152—N. C. Sanatorium, postage	22.00
"	"	153—Dr. L. B. McBrayer, salary Secretary-Treasurer	600.00
"	"	154—Dr. B. E. Love, refund of dues	3.00
"	"	155—Page Trust Co., note	1,500.00
"	"	156—Dr. W. C. Mudgett, refund of dues	3.00
"	"	157—N. C. Sanatorium, postage	22.00
"	"	158—Dr. L. W. Elias, refund excess dues	2.00
"	"	159—Dr. Allen McLean, refund excess dues	11.00
"	"	160—Dr. G. W. Choate, refund of dues	3.00
"	"	161—Dr. S. J. Montague, refund of dues	3.00
"	"	162—Martin Sign Co., 3 signs	4.50
"	"	163—Southern Medicine and Surgery, 2,200 envelopes	10.62
"	"	164—Dr. Lynn McIver, refund of dues	3.00
"	"	165—Dr. P. W. Fetzer, refund of dues	3.00
"	"	166—N. C. Sanatorium, postage	102.54

" "	167—Western Union Telegraph Co., March acct.	26.31	
" "	168—Dr. W. L. Dunn, refund of dues	3.00	
" "	169—Dr. W. C. Mudgett, refund of dues	3.00	$7,879.68

Balance, 4-14-23	$1,729.06
Checks outstanding:	
No. 149	$ 3.00
No. 165	3.00
No. 168	3.00
No. 169	3.00
Balance Page Trust Co.	$1,741.06

DISTRIBUTION OF EXPENSES

Dues refunded, paid twice	60.00
Postage, express, telegraph	373.88
Stationery, office supplies	182.88
Reporting meeting, Winston-Salem	455.62
Printing 1922 Transactions	3,101.00
Salary, Secretary-Treasurer	600.00
Program 1922	76.00
Interest on loan	30.30
	$4,879.68
Check No. 122 issued to transfer fund to saving account	$1,500.00
Check No. 155 to pay note due	1,500.00
	$7,879.68

Aberdeen, N. C., April 14, 1923.

This is to certify that the Medical Society of the State of North Carolina has on deposit in this Bank the sum of $1,741.06.

PAGE TRUST COMPANY,
By Francis Pleasants.

The report of the Secretary-Treasurer was received, and the part of it relating to the finances of the Society was referred to the Committee on Finance. Action on the rest of the report was deferred until the next session of the House of Delegates.

NOMINATING COMMITTEE

The following delegates were elected as members of the Nominating Committee:

First District	Dr. H. M. S. Cason
Second District	Dr. J. M. Parrott
Third District	Dr. Cyrus Thompson
Fourth District	Dr. Ben H. Hackney
Fifth District	Dr. W. T. Rainey
Sixth District	Dr. V. M. Hicks
Seventh District	Dr. J. N. Anderson
Eighth District	Dr. J. T. Burrus
Ninth District	Dr. C. M. Van Poole
Tenth District	Dr. Carl V. Reynolds

The House of Delegates then adjourned, to meet the next day (Wednesday) at nine-thirty A. M.

Wednesday, April 18th, 9:30 A. M.

The Committee on Finance reported as follows:

We, your Committee on Finance, have investigated the accounts and records of the Secretary-Treasurer, and find that they are correct.

J. T. Burrus, Chairman.

The report of the Committee was accepted.

The Secretary-Treasurer read the following letter from Dr. E. J. Wood:

Wilmington, N. C., April 15, 1923.

Dear Dr. McBrayer:

I shall not be able to get to Asheville—a great disappointment. I have been seriously sick, and am in my fifth week of it.

I am sorry to miss this meeting. One or both of the other members of the Committee on Scientific Work may have a report to make. Mine must go by.

This meeting is the most important thing to me in my year's program—more important, indeed, than the session of the Association of American Physicians, which I can never afford to miss. The importance of this meeting of ours I can not discuss, for lack of strength, but I would say to all young men in the profession never to miss it, and from the vantage ground of twenty years of practice in North Carolina, as I now have, they will understand.

I wish you a successful, constructive session, on the high plane of the past few years. And I trust the young man on his first attendance may not get the prejudice of political activities for this is the hardest of all prejudices to live down.

Will you present my compliments to President Long, with the wish that his meeting may be the best?

Sincerely,

E. J. Wood.

Upon motion of Dr. Cyrus Thompson, the Secretary-Treasurer was directed to express to Dr. Wood the sincere sympathy of the members of the Society, and their regret at his inability to be present, with heartiest wishes for his speedy and complete recovery. Seconded by Dr. I. W. Faison.

Sanatorium, N. C., May 1, 1923.

Dr. E. J. Wood,

Wilmington, N. C.

My dear Dr. Wood:

Your letter of April fifteenth was read to the session of the House of Delegates Wednesday morning, April eighteenth. The sorrow of all pres-

ent on account of your illness was markedly noticeable. On motion of Dr. Cyrus Thompson, the Secretary-Treasurer was directed to express to you the sincere sympathy of the members of the Society and their regret at your inability to be present, and to extend to you their heartiest good wishes for your speedy and complete recovery.

May I say, in addition, that the entire medical profession of the State love you and appreciate you for your own good self and your own worth? In your work you have been a great stimulation to the profession in our State to know medicine better and to do it better.

Sincerely your friend,

L. B. McBrayer,
Secretary-Treasurer.

REPORT OF THE COMMITTEE ON PUBLIC POLICY AND LEGISLATION

We, your Committee, beg leave to report as follows upon our activities since our appointment just a year ago. We have not found it necessary to introduce any legislation changing any of our present medical laws. The past session of the General Assembly has been peculiarly marked by the introduction of few bills touching upon medical laws. There were only four bills in all, three of which affected only one phase of the medical laws; the fourth was vitally important, so vital that it is deemed advisable to bring the main provisions of the bill to the attention of the whole medical profession, in general session, in the annual report of the Board of Medical Examiners.

All bills introduced never were reported out of committee. Two were introduced in the House and two in the Senate. The first bill to come up was the bill introduced by Dillard, of Cherokee to grant J. H. Crawford a license to practice medicine in Beaver Dam Township in Cherokee County. A conference with Mr. Dillard resulted in the bill's being withdrawn. The next bill was introduced by Ross to permit the Governor to appoint one member of the Board of Medical Examniers, effective upon the passage of the bill. A conference with him resulted in the bill's being withdrawn from committee. The next bill was introduced by Senator Long and provided for a radical change in the administration of medical licensure laws. Upon this the report of the Board of Medical Examiners to the Medical Society enters into detail. This bill was never reported out of committee but will be a live issue at some future session of the General Assembly. The last bill was introduced by Senator Cox to grant a license to Thomas L. Estes to practice medicine in Alleghany County. Conference with the chairman of the committee to which the bill was referred resulted in the bill's being reported unfavorably.

Respectfully submitted,

K. P. B. Bonner.
H. M. S. Cason.
James M. Parrott.

The report of the Committee was adopted.

REPORT OF COMMITTEE ON MEMORIAL FOR THE NORTH CAROLINA PHYSICIANS WHO DIED IN THE LATE WAR

We, your Committee, wish to recommend that this Society erect a suitable memorial to those of its members who fell while in service during the recent War, and that their names be inscribed in some conspicious place thereon.

The selection of the place to erect the memorial, and the time, to be deferred to some future meeting.

J. P. Munroe, Chairman.
A. J. Crowell.
L. B. McBrayer.
James M. Parrott.
J. T. Burrus.

The report was accepted and the Committee continued.

COMMITTEE ON SCIENTIFIC WORK*

No report.

REPORT OF COMMITTEE ON ESTABLISHMENT OF A STATE MEDICAL JOURNAL IN LIEU OF TRANSACTIONS

In accordance with your instructions, the Committee appointed to consider the advisability of establishing a State Medical Journal begs leave to report as follows:

1. We believe that there is a real need for a medical journal which shall be the official organ of and owned and published by the Society, and containing no unethical or substandard advertisements. In our opinion this journal should appear monthly and take the place of the present volume of Transactions. The advantages of the journal are obvious: direct communication from the Society's headquarters with each member every month, not depending upon desultory and expensive circular letters at intervals; the distribution of medical news from all over the State; the early publication of the minutes and papers read at the State meeting, as well as those submitted to district and county societies, and of a selected number of contributions from eminent men outside the State; the placing of a high class professional periodical in the hands of the fourteen hundred members of this organization, many of whom do not now subscribe to a medical journal.

*Committee: Dr. E. J. Wood, Chairman, Wilmington; Dr. Wm. deB. MacNider, Chapel Hill; Dr. C. A. Shore, Raleigh.

The following objections to this proposed journal may be made:

Sentiment would prompt many to cling to the book of Transactions, which, coming but once a year and frequently at a date far removed from the meeting, is cursorily glanced at, put upon the shelf and not referred to again except to look up some name or motion or by-law; others may object on the basis of expense, which will be referred to later; also some might fear that it would be difficult to preserve the twelve copies of the journal, but these could be kept on bookshelves and bound later at very small cost.

2. To avoid any considerable outlay of money we believe that the journal should be founded at the beginning by the Society through a publication committee of five members, elected by the House of Delegates, which committee shall constitute the editorial board of the journal, serving their terms as may be designated by you without pay. It is our unanimous vote that the journal be published by contract to the lowest reliable bidder and that the Society not assume the burden of its own printing plant.

3. We recommend that the publication committee be empowered to elect from its own members an editor-in-chief who shall receive no compensation, and also to employ a managing editor or business manager (who may also be Secretary-Treasurer of the Society) for such a term and at such a salary as the publication committee may determine. The said committee alone shall have authority to make all contracts in relation to printing, subscriptions, salaries, advertising, et cetera.

4. It is estimated that the cost of printing a creditable journal will be about $10,000 a year. Advertising revenue can be obtained to come within $2,000 of that amount. From the report of the Secretary-Treasurer of last year it is noted that dues collected from members amounted to $4,281. If this same ratio continues, it will be seen that there is a sufficient margin to take care of the increased output.

The publication committee should be given the power to analyze the figures and, if they deem it necessary, to advance our annual dues from $3.00 to $5.00, as most of the State medical societies have done in the past few years, some of them going much higher than the rate named. It must be taken into account that the last figures on printing the Transactions were $3,298.02. Even if it should be necessary to increase our annual dues, we would be receiving a monthly transcript of the proceedings, plus twelve copies of a scientific journal for the small additional sum expended.

We earnestly hope that, if the House of Delegates concur in our recommendations (as a reasonable assumption prompts us to believe they will), the business of establishing the journal will be executed promptly in order to secure advertising contracts and to get the benefit of beginning a new volume by July first.

Respectfully submitted,

H. A. Royster.
John Q. Myers.
J. F. Highsmith.

Upon motion of Dr. J. T. Burrus, the report of the Committee was accepted and its recommendations rejected. The Committee was discharged.

REPORT OF NOMINATING COMMITTEE

Officers

President	Dr. J. Vance McGougan	Fayetteville
First Vice-President	Dr. J. L. Spruill	Sanatorium
Second Vice-President	Dr. Eugene B. Glenn	Asheville
Third Vice-President	Dr. D. A. Garrison	Gastonia
Secretary-Treasurer	Dr. L. B. McBrayer	Sanatorium

Delegates

To American Medical Association	Dr. M. L. Stevens, Asheville, 1923 Dr. H. A. Royster, Raleigh, 1923-1924
To Medical Society of Virginia	Dr. C. T. Smith, Rocky Mount Dr. C. S. Lawrence, Winston-Salem Dr. Claude B. Williams, Elizabeth City Dr. Paul H. Ringer, Asheville Dr. C. F. West, Kinston
To South Carolina Medical Association	Dr. Albert W. James, Hamlet Dr. W. R. Kirk, Hendersonville Dr. James A. Martin, Lumberton Dr. Albert S. Root, Raleigh Dr. Henry L. Sloan, Charlotte

Committees

Public Policy and Legislation	Dr. K. P. B. Bonner, Chairman, Raleigh Dr. W. A. Monroe, Sanford Dr. A. A. Kent, Lenoir
Publication	Dr. L. B. McBrayer, Chairman, Sanatorium Dr. M. L. Townsend, Charlotte Dr. Harry L. Brockman, High Point
Finance	Dr. Foy Roberson, Chairman, Durham Dr. W. F. Hargrove, Kinston Dr. J. C. Hall, Albemarle
Obituaries	Dr. A. W. Knox, Chairman, Raleigh Dr. C. F. Strosnider, Goldsboro Dr. F. L. Siler, Franklin

Place of meeting, 1924, Raleigh. Chairman of Committee on Arrangements, Dr. Albert Anderson.

The report of the Nominating Committee was adopted.

Upon motion by Dr. K. P. B. Bonner, the report of the Secretary-Treasurer (read April 17) was accepted, but his resignation was rejected.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS

Your Committee to which was referred the excellent Presidential Address cordially commends the same, and begs to submit the following recommendations:

1. That we approve the recommendation contained therein to re-establish the custom of having a written report from the delegates to the American Medical Association of what they see and hear.

2. That each county society take such steps as are deemed advisable to secure and deliver to the State Society all possible data relating to its medical history.

3. That every effort be made to acquire the enrollment in the county societies of every eligible physician within the border of the State.

4. That all activities born of the Society and emanating from its influence be nurtured and developed by the Society for the good of the profession and humanity, and that suitable committees be appointed for this purpose.

5. That a section of the Society be inaugurated for the specific purpose of acquiring historical data as the years go by, to be entitled Section of Medical Veterans and Medical Officers' Reserve Corps.

6. That we approve the action of the House of Delegates in voting a Woman's Auxiliary for this Society.

7. That the delegates of the Society to the American Medical Society be instructed to take no part in favoring the division of the United States into districts, as recently proposed by the American Medical Association.

8. That we commend the School for Candidates for Fellowship in the American College of Surgeons.

9. That we recommend every effort on the part of our Government looking to the comfort and rehabilitation of our country's disabled soldiers.

10. The value of the Society's annual volume of Transactions having been so emphatically demonstrated in the preparation of the estimable address of the President at this meeting, we recommend its continued publication.

11. That the establishment of a four-year medical school for North Carolina be approved.

12. That we approve of any undertaking which will make a way for the young medical man to practice his profession in an environment favorable to his giving the best that is in him to the people of our State.

J. Howell Way,
John Q. Myers,
Chas. O'H. Laughinghouse,
Committee.

The report of the Committee was adopted.

REPORT OF COMMITTEE ON RECOMMENDATIONS OF THE PRESIDENT TO THE HOUSE OF DELEGATES

We, your committee appointed to consider the recommendations of the President in his address to the House of Delegates, beg leave to submit the following:

1. That Article VIII, Section 1, of the Constitution be amended to read as follows: 'The officers of this Society shall be a president, who shall be elected one year in advance of his term of office, three vice-presidents, a secretary-treasurer, and ten councilors.

2. That Article IV, Section 6, of the Constitution so fully covers the ground relative to honorary fellowship that we recommend that it be not changed.

3. That to Chapter III, Section IV, of the By-Laws be added the following: "Provided that the terms of this section shall not apply to invited guests delivering the principal addresses of the meeting."

4. That Chapter IV, Section VII, of the By-Laws be eliminated.

5. That the recommendation of the President for Chapter VI, Section 2, of the By-Laws is already covered by Chapter XV, Section 1.

6. That the latter clause (that in parenthesis) of Chapter IV, Section 11, be eliminated.

7. That to Chapter X, Section 1, the following be added: "Provided that the President, in making his appointments of chairmen for the several sections, shall give due consideration to the recommendations offered by the individual sections."

8. That we recommend the following additions to the By-Laws "Chapter XVII, Section 1: In view of the fact that it costs physicians and surgeons to make reports of past or present illness or disability of patients to corporations, companies, or others, we deem it fair and just that a fee be charged for such reports, the amount of said fee to be determined by the local county medical society, and that no such report be made without the written consent of the patient."

9. That an additional section, known as Chapter XVII, Section 2, shall read as follows: "That a Woman's Auxiliary to the Medical Society of the State of North Carolina shall be organized."

10. We recommend that a committee be appointed by the President to revise, codify, and publish the Constitution and By-Laws of this Society, and report same to the next annual meeting of this body.

Respectfully submitted,

C. M. Van Poole, Chairman.
D. A. Garrison.
Paul H. Ringer.
H. M. S. Cason.
C. W. Banner, Secretary.

Dr. Charles O'H. Laughinghouse moved that the report be received, and that it lie upon the table and be acted upon in accordance with the machinery provided in the Constitution and By-Laws. This motion was seconded and carried.

Dr. Cyrus Thompson moved that further consideration of this report be deferred for twelve months, until the next annual session. Seconded and carried.

Dr. H. A. Royster, Raleigh, Custodian of the funds of the previous Board of Medical Examiners, made the following report:

In accordance with the recommendation of the committee appointed to handle the funds of the previous Board of Medical Examiners, I desire, as the custodian of the funds, to report that, under their instructions (pages 396-397, Transactions 1922), I turned over the money on hand to Dr. K. P. B. Bonner, the Secretary and Treasurer of the present Board of Examiners, and hold his receipt for it. I will ask Dr. Bonner to confirm this statement, so that it may go upon the records.

Dr. K. P. B. Bonner, Secretary and Treasurer, Board of Medical Examiners, stated that the transfer of funds had been made and a receipt given Dr. Royster, the funds being, at the present time, on deposit.

The report of Dr. Royster was accepted.

After an address by Mr. G. H. Winfrey, Secretary of the Medical Society of Virginia, on automobile insurance for physicians (damage and liability insurance). Dr. L. B. McBrayer moved that a committee of three be appointed to look into the matter, study it, and report at the next annual meeting. The motion was seconded and carried. Committee: Drs. J. T. Burrus, High Point, Chairman; F. M. Hanes, Winston-Salem; R. Duval Jones, New Bern.

The following resolution, introduced by Dr. I. W. Faison, was adopted:

Resolved, that the Medical Society of the State of North Carolina, taking note of the summer extension postgraduate medical courses as given through the agency of the School of Medicine and the Extension Division of the University of North Carolina, hereby lends its full support and co-operation and gives its official endorsement to the aforesaid School of Medicine and Extension Division in promoting the summer extension postgraduate medical courses which are proposed for the future.

Dr. W. H. Smith, of Goldsboro, introduced the following resolution, which was adopted unanimously:

Whereas the medical profession of North Carolina welcome more knowledge on tuberculosis, Therefore, be it

Resolved, that the House of Delegates recommend that the clinician holding the tuberculosis clinics for the North Carolina Tuberculosis Association be requested to hold teaching clinics for physicians at each point where diagnostic clinics are held.

REPORTS OF COUNCILORS

First District: Dr. H. D. Walker, Elizabeth City, Councilor:

The counties forming the First District are as follows: Currituck, Camden, Pasquotank, Perquimans, Gates, Chowan, Washington, Tyrrell, Dare and Hyde. Currituck County Society is organized and every physician in the County is a member of the Society. The largest Society in this District is composed of physicians of three counties, known as Pasquotank-Camden-Dare Society. It is well organized and has regular monthly meetings. Chowan and Perquimans have two or three meetings during the year and are well organized. Washington and Tyrrell have monthly meetings at Mackeys and always have a good attendance. Gates County has no county society because the physicians live so far apart. At the meeting of the First District Medical Society on March ninth your Councilor made an effort to have Gates County join Chowan and Perquimans. I understand this will be done in the near future. There are only four doctors in Hyde County and they are from fifteen to twenty-five miles apart, so it is very hard to have a meeting. In my opinion the profession of the First District is fairly well organized, but there is still room for improvement.

Until last year this District had no District Medical Society. It was organized last year in Elizabeth City. On March ninth we had a meeting of the First District Medical Society at Edenton in Chowan County. There were about thirty members present and no doubt the attendance would have been larger had it not been for an epidemic of influenza in the District at that time.

On account of the geographic location of the counties of the First District a motion was made to ask the House of Delegates to include in the First District only the counties north of Albemarle Sound, Washington, Tyrrell and Hyde Counties, therefore, would be included in the Second District.

Dr. J. W. Long, of Greensboro, President of the State Medical Society, was with us at Edenton and gave us a very interesting and instructive paper. There were also other papers read and reports of cases by different members of the Society. As the meeting was so interesting and instructive it was decided to have three meetings during the year—the next at Elizabeth City at the call of the Secretary about next September.

No reports from Second, Third, and Fourth Districts.

Fifth District—Dr. A. McN. Blair, Southern Pines, Councilor:

We have a regular organization and hold meetings twice yearly. The July meetings in the past have been held at the State Sanatorium, the members being guests of the State Sanatorium staff. The winter sessions have formerly been held in Fayetteville, as guests of the Fayetteville physicians and Cumberland County Medical Society. This year it was the privilege of Southern Pines

to entertain the District Society in January as guests of Dr. James Dickie and local physicians. These meetings are always well attended, and excellent papers are presented, with a general discussion following. The genial hosts of the occasion always see that the inner man is fully replenished.

I have nothing special to report concerning the component county societies of the District, except that all is serene and the spirit of harmony prevails.

No reports from Sixth and Seventh Districts.

Eighth District—Dr. W. F. Cole, Greensboro, Councilor:

I wish to report the activities of one of the most progressive districts in the State. The whole District is in perfect harmony. The district meeting was held in Greensboro last November, with a program consisting of a Symposium on Infections of Bones; a paper, "Medical Aspects of Infections of Bones;" also a paper on "The Roentgenological Diagnosis and Pathology of Bone Infections." It was prearranged so that this topic would be ably discussed by men specializing in the different branches of surgery and medicine. One of the most interesting discussions was from the dental side. The afternoon was devoted to the scientific papers, and following this session a banquet was served. We had as speakers on that occasion two distinguished members of the legal profession. There were present one hundred and eight members of the county societies in the District. The whole program was enjoyed so much that the Society instructed the incoming president to continue the symposium idea at the next meeting.

We also have meetings of the staffs of the different hospitals in the District. On these occasions the host presents the case, and the visitors discuss it. These meetings are open, and at the first one we had seventy-two present. This idea gets the towns together, and is very effective in producing good fellowship.

At all of our meetings in the District we invite all the medical men, whether or not they belong to the county societies, but I am glad to say that there are very few men outside the societies.

Ninth District—Dr. C. M. Van Poole, Salisbury, Councilor:

The ninth District is in splendid working condition, though we have had an experience during the year that somewhat hampered the work. Our District President, Dr. G. A. Ramseur, of China Grove, died early in the year, and not long thereafter the Secretary, Dr. I. M. Taylor, of Morganton, died, leaving both offices vacant. Dr. James Vernon, of Morganton, son-in-law of Dr. Taylor, assumed the duties of Secretary, and asked me, as Councilor, to act as President until the Society could elect officers, which I did.

We planned and held a most interesting meeting at Morganton in October, at which a number of papers were read and addresses delivered. Among the speakers were the President of the State Society, Dr. J. W. Long; Dr. L. B. McBrayer; Dr. W. S. Rankin;

Dr. James K. Hall, of Richmond; and others. Many new faces were seen at this meeting, men who had never before attended a district meeting. Dr. H. H. Newman, of Salisbury, was elected President, and Dr. James W. Vernon Secretary.

The next meeting will be held in Statesville, and we shall endeavor to make it the best meeting in the history of the Society.

Tenth District—Dr. Eugene B. Glenn, Asheville, Councilor:

As Councilor of the Tenth District, I have the honor to submit the following report:

The annual meeting of the Tenth District Medical Society was held in Hendersonville, October 12, 1922. There were eighty-one members, eleven visiting physicians and twelve ladies present. Six excellent papers were read, followed by free and full discussions. The Society had as its honor guests Dr. J. W. Long, Greensboro, President of the State Medical Society, and Dr. L. B. McBrayer, Superintendent of the State Tuberculosis Sanatorium, Sanatorium, and Secretary of the State Medical Society. Each of these guests addressed the Society and stimulated much zeal and interest in the meeting.

The Society was served a banquet, followed by a musical entertainment provided by the Henderson-Polk County Medical Society.

Following the close of the scientific program, which extended well into the evening, was the annual election of officers. Officers elected for the ensuing year were: President, Dr. Guy E. Dixon, Hendersonville; First Vice-President, Dr. J. F. Abel, Waynesville; Second Vice-President, Dr. J. F. Jonas, Marion; Third Vice-President, Dr. G. B. Lynch, Rosman; Fourth Vice-President, Dr. J. LaBruce Ward, Asheville; Fifth Vice-President, Dr. C. V. Orr, Andrews; Secretary, Dr. W. J. Hunnicutt, Asheville, re-elected.

The semi-annual meeting was held in Waynesville on March twenty-first. Members present sixty, visitors one, ladies six. There were eight interesting papers read, and also an address by Dr. W. S. Rankin, Raleigh, Secretary of the State Board of Health. Dr. Rankin's address was delivered in his usual able and impressive style and was enjoyed by every one present.

Dinner was served by the United Daughters of the Confederacy of Waynesville, the food and refreshments being furnished by the local profession.

It is interesting to note that there were one hundred and forty-one attendants at the two meetings, forty-four of whom attended both meetings.

The Tenth District Society is growing stronger and more influential every year. The men from the outlying districts are reading more papers than ever before. The Councilor visited every organized county society in his district during the year and used his influence and assistance in trying to organize other societies. The

Tenth District is noted for its magnificent distances divided by mountain ranges, with poor connecting roads and, in many instances, sparsely settled communities. To show the interest that the men of the District take in their District Society, I desire to mention the fact that every physician in Clay County attended the meeting held in Murphy last year.

I wish to thank the President, the Secretary of the State Medical Society and the Secretary of the State Board of Health for the interest and valuable assistance given the Councilor of the Tenth District.

The reports of the Councilors were adopted.

No further business appearing, the House of Delegates adjourned *sine die.*

ASSOCIATION OF COUNTY SECRETARIES

No formal meeting of the Association of County Secretaries was held, but the secretaries and all other officers of the county medical societies were invited to the dinner meeting on Tuesday, April seventeenth, at six-thirty P. M., which meeting was presided over by Dr. J. W. Long, President of the State Society.

The officers of the Association, Dr. W. E. Coltrane, President, and Dr. L. B. McBrayer, Secretary, will hold over for the next year.

SCIENTIFIC PAPERS

SECTION ON GYNECOLOGY AND OBSTETRICS

SECTION ON PRACTICE OF MEDICINE

SECTION ON PUBLIC HEALTH AND EDUCATION

SECTION ON SURGERY

SECTION ON PEDIATRICS

SECTION ON EYE, EAR, NOSE AND THROAT

SECTION ON CHEMISTRY, MATERIA MEDICA AND THERAPEUTICS

NORTH CAROLINA SECTION OF MEDICAL VETERANS AND MEDICAL OFFICERS' RESERVE CORPS, U. S. A.

GYNECOLOGY AND OBSTETRICS

CHAIRMAN: IVAN PROCTOR, M. D., RALEIGH

A PLEA FOR BETTER OBSTETRICS IN THE STATE OF NORTH CAROLINA

(Chairman's Address)

In the year 1921 there were 91,498 pregnancies registered in North Carolina. Out of this number 526 women died and 6,851 infants lost their lives before the end of the second week. These figures, although they compare favorably with those of other states, show us that a great number of lives can be saved by raising the standard of obstetrics.

In our State the larger part of obstetrics comes in the private practice of physicians and we should therefore be able to establish a lower mortality rate. The task before us is a large one and the problems are many, but they can be solved and now is the time to begin.

First we must take inventory of ourselves. Do we realize and appreciate the seriousness of obstetrics? Do we believe that the present conditions can be improved? Are we sufficiently interested, well enough informed and capable of accepting the responsibility of a woman throughtout her gestation? Do we guide our pregnant patients and not follow them? Do we instruct each patient in modern obstetrics,—not only for the good she receives but for the good she may impart to her sisters?

Primiparas of today should receive such thorough prenatal care and proper conduct of labor as to drive away any existing fear and dread of a second pregnancy. But this great work cannot be accomplished until we realize that over fifty per cent of childbearing women develop some pathological condition during pregnancy. The symptoms of these pathological conditions are often vague and it requires an alert, keen observer to ferret them out. The foundation for grave pathology is being laid, nevertheless, and sound obstetric judgment is necessary to obtain the best results.

The obstetrician, of all men, should conscientiously perform his duties. He should teach his patients the importance of reporting as soon as pregnant. The problem of education must be taken over by the profession, individually and collectively; it can not be left to a committee, the State Board of Health or the State Medical Society. Physicians in the rural districts especially must take over this work and not until they are doing their part will the frequent complaint, that patients first report when in labor or eclampsia, cease to be heard.

If we of the profession do not grasp this important work and carry it out properly the Federal and State Governments will soon be caring for a large part of obstetrics, mainly because the people want protection against the dangers of pregnancy, and modern technique at the time of

labor, and scientific after-care. (1) At the present time physicians are attending only 59,000 births, or sixty-five per cent, of the 91,000 births that take place in our State every year. This leaves 32,000, or thirty-five per cent, over one-third of the births, to be cared for by unprofessional, unscientific and often ignorant midwives. Are we going to allow this to continue? Suppose that for each birth in North Carolina the attendant is paid an average fee of $20.00, the sum total for the State would amount to $1,829,960 a year. At present the physicians who should receive this entire sum (and who would still be greatly underpaid for their services) are receiving only sixty-five per cent, or $1,189,474 and losing $640,486 a year. Are we satisfied with this state of affairs? If not, it is up to us to change it. If we don't, State medical men will do it for us.

Some of the pessimists cry out that our fees are not large enough to compensate us for the time it requires to properly care for an obstetric patient. It is true—but upon whom can the blame be laid? Who set the surgeon's fee at a standard sufficient to compensate him for his services? Who is going to raise the standard of obstetric fees? If it is done, we shall have to do it. How?—by rendering modern skilled obstetric service. If we care for these patients as they should be cared for, from the beginning of pregnancy until they return to normal six weeks or six months post partum, the average patient will be glad to pay a satisfactory fee.

The plan of charging an obstetric fee for services rendered from the beginning of pregnancy throughout the puerperium, instead of charging for each visit, is worthy of consideration. It eliminates the desire of patients to reduce their ante partum visits to a minimum in order to save this or that charge. It also encourages full co-operation and means better service for the patient without additional cost.

Prenatal care is probably the most important branch of obstetrics. Within the past few years societies have been formed, prenatal clinics organized, the State Board of Health has formed a Maternity Bureau, and Congress has appropriated money for the work. This is a great step forward and when properly carried out by the profession at large will result in lowering obstetric mortality. (2) "Records are available to show that when prenatal care of the modern standard type is carried out, as well as careful technique at the time of labor and proper post partum supervision, hundreds of cases may be conducted without eclampsia, stillbirths or maternal mortality." But until we educate or eliminate that class of physicians who give their patients a casual examination or none at all, and tell them to call when they fall into labor, we cannot expect a great change. Such practice increases the field for the midwife and makes education harder for the conscientious physician.

(3) J. Whitridge Williams, in a study of 302 deaths from viability to two weeks immediately following labor, showed that seventy-two per cent of the entire number were due to syphilis, dystocia, toxemia and prematurity. Each of these conditions is reduced to a minimum in cases under proper prenatal care and toxemia in the severe form is practically eliminated.

Toxemia makes up the greater part of pathology during pregnancy. Early toxemia, with which all of us are so familiar, deserves a great deal more consideration than it has received in the past. The treatment of this condition often means the making of a patients' health. These patients should not be told, as is often the case, that their nausea and vomiting is natural and that nothing can be done for it. On the contrary a great deal can be done for it. Besides regulation of the diet, time of eating, attending to the emunctories, and a little sedative, corpus luteum extract is almost a specific in early toxemia. Many patients who have been constantly nauseated and vomiting daily have ceased to vomit after the first or second intravenous dose and the nausea has disappeared in two or three days. The occasional patient who fails to respond to this and all other treatment will practically always respond to (4) Paddock's method of detoxifying and feeding through the duodenal tube.

Late toxemia is the most serious pathological condition of pregnancy. It requires more attention, thought, keen observation and sound judgment than any other condition. The fully developed toxemia or eclampsia should rarely if ever be seen in private practice. It is a preventable disease and proper prenatal care is the prophylactic. (5) At Bellevue Hospital during the past three years eclampsia has not developed in patients who have been under observation in the prenatal clinic. We are all familiar with the pre-eclamptic symptoms and signs, but we should place more importance upon them. Urinalysis, although helpful, cannot be relied upon; (6) "blood pressure, on the other hand, is the most reliable pre-eclamptic sign." A gradual rise in blood pressure practically always precedes the toxic picture and upon this sign alone a patient should receive eliminative treatment—dieting, absolute rest, and if necessary starvation. If the blood pressure is not lowered in a reasonable length of time after such treatment is instituted, labor should be induced without delay. This is our only hope for lowering eclamptic mortality.

(7) "The chief causes of fetal mortality are obstetric operations, hard labors, pituitrin and prematurity (syphilis)". Operations and hard labors are usually the result of ignorance, inattention, or bad obstetric judgment. We often hear the surgeon speak of surgical judgment. What is it? It is the ability a man derives from study and experience that makes him capable of weighing the evidence in a case and dealing out a solution of the problem that will bring the best results to all concerned. We need more of this in obstetrics. To my mind obstetric judgment is the master key to the safe conduct of labor. It is not so much the ability a man possesses for a certain operation (although this cannot be discounted) but it is the ability to decide when to interfere, when not to interfere, and what type of interference will best serve the particular patient under the existing conditions. In cases that require assistance, if it is given too soon the obstetrician does the damage; if too late nature does it. We must stop thinking only in terms of "Let nature take her course"—and adopt the rule: So long as nature does her work properly let her alone; when she fails give her assistance.

Infant mortality covers a large field. We often hear of the number of syphilitic stillbirths and the total mortality under one year of age,

but we are not told of the mortality resulting from birth injuries, preventable and curable. As Ehrenfest states, "Forty per cent of autopsies performed on stillbirths and those dying a few days after delivery show definite traumatic intracranial lesions which are directly responsible for death. This fact should encourage us to examine new born babies more carefully, palpate the entire skeleton, observe their behavior for several days, take the clotting time and, in selected cases, x-ray or do a lumbar puncture. The pediatricians have shown us that many babies with convulsions can be saved by repeated spinal puncture. The injured babies deserve more consultations that we have been in the habit of giving them. In the border line cases there should be close co-operation between the obstetrician, pediatrician and at times the surgeon."

Pituitrin helps to raise fetal mortality because it is often used by those ignorant of its action. If its use is permissible before the third stage of labor it is only after the cervix is well retracted around the fetal head without obstruction either bony or muscular. (8) As stated by Fowler, "Normal uterine contractions during labor squeeze the blood out of the placental sinuses, but as these contractions last only one-half to one minute there is time for refilling of the sinuses before the next contraction. After the use of pituitrin pains often last three to five minutes, and are followed by an incomplete relaxation and a second pain lasting two to three minutes. Such abnormal uterine contractions produce partial or complete asphyxia and at times cerebral hemorrhage. If physicians will study out the action of this powerful drug by timing labor pains before and after its use and listening to the fetal heart sounds during its action, I venture to say that their indications and enthusiasm for pituitrin will diminish."

(9) Asepsis is the backbone of modern surgery, yet it is the most frequently violated principle in obstetrics. "This can be explained on the ground that the aseptic conduct of labor presents a difficult problem, but not one that cannot be mastered. Second, the vast majority of labors are conducted by men who do not undertake any other class of major or aseptic surgery and therefore have not developed a considerable degree of perfection in technique." Obstetrics is often major surgery and no one can foretell every case that will fall into this class. The public permit and encourage men without special training to handle major surgical problems in this branch of medicine and this fact tends to keep down the standard of obstetrics. So many people do not realize that there is any choice of physicians for labor cases, but if it comes to surgeons they are particular to employ the most skilled and not the cheapest. (10) One of the greatest steps forward in the aseptic conduct of labor is the substitution of rectal for vaginal examinations. The latter has practically no place in the delivery of a normal case. Rectal examinations cannot always be relied upon in cases that do not progress satisfactorily, but this should be the only method employed in eclamptics, patients with contracted pelves, or in those who might require cesarean section.

Reed (11) of Chicago has standardized ante partum fetometry so that it is real aid in the safe conduct of labor. Every physician doing

obstetrics should be familiar with the Ahlfeld, McDonald, and Perret measurements used in determining fetal maturity. I am not an advocate of routine induction of labor at maturity but do think it is absolutely essential that the obstetrician be able to recognize a mature fetus and approaching signs of disproportion.

One of the greatest mistakes being made today is the failure to follow up women after labor. Physicians pay very little attention to the character of involution that the uterus undergoes or to the position that this organ assumes after childbirth. These two things alone produce unlimited discomfort and morbidity in the weeks and months to follow.

Lynch (12) of San Francisco gives some interesting statistics on post partum retroversion. "A study of 1230 women between the fourth and twelfth months post partum showed 41 per cent with retroversion (second or third degree). 76 per cent of the cases showed retroversion in the first four months. About 35 per cent of the patients with retroversion complained of pelvic symptoms. Replacement and pessary support gave anatomic correction in 72 per cent of those that wore pessaries. The same procedures gave symptomatic cure and anatomic correction in 68 per cent of those presenting (161) symptoms." It is essential that we examine patients more frequently and thoroughly during the puerperium and months to follow in order to correct common pathological conditions.

In conclusion, physicians practicing obstetrics should acquaint themselves with prenatal care of the modern standard type, proper technique for labor, and scientific after-care.

They should give obstetrical patients the same amount of time, thought, and study that they give difficult medical and surgical patients.

The midwife problem should be solved by raising the standard of obstetrics. Show the women of our State that it is cheaper, safer, and more satisfactory to have professional services throughout pregnancy, labor and the puerperium than merely an attendant at birth.

Physicians should demand more adequate fees for modern obstetric services.

Prenatal care when properly carried out plays a great part in lowering obstetric morbidity and mortality.

Such bad obstetric judgment as the indiscriminate use of pituitrin, high forceps, manual dilatation of the cervix, the use of forceps before complete dilatation, and hard labors without any attempt to eliminate pain should be reduced to a minimum.

Infant mortality can only be reduced by proper prenatal care, obstetric judgment and closer observation immediately after birth.

The substitution of gentle rectal for vaginal examination is the greatest step forward in the aseptic conduct of labor.

Careful post partum supervision is important in preventing subsequent morbidity.

When we raise the standard of obstetrics to the present day standard of surgery, and have a sufficient number of trained obstetricians and hospital facilities available for obstetric the same as for surgical patients, we shall see a great reduction in our present morbidity and mortality.

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DISCUSSION

DR. ——————————:

While I am not particularly interested from the standpoint of obstetrical work, I am very much interested in what Dr. Procter has said about the use of pituitrin. That is a very important question. In the work of handling crippled children in the State, it is the opinion of Dr. Miller, of Gastonia, that the diseases producing the greatest number of deformities are infantile paralysis and spastic paralysis. The spastic comes second in causing all deformities. It is our opinion that spastic paralysis is produced by some specific condition at birth. I recently talked with Dr. Sharpe about the work being done and he says that injury at birth is a very important feature. They are doing a lumbar puncture on children born normally or otherwise, and he says that they find that twelve to fourteen per cent show blood in the spinal fluid. I think it is up to the physicians to reduce our spastic paralysis by better obstetrics.

Dr. R. T. Ferguson, Charlotte: I hope we shall see the day when only the specialist will handle work in obstetrics. I do not do any obstetrical work myself so do not speak from a selfish standpoint. There is no branch of the profession that requires more specialized care than obstetrics. I hope that the day will come when every woman who has to go through labor will be able to have the care of a man who does nothing but obstetrics and who will be qualified to give the care necessary to bring forth normal, healthy children.

OBSTETRICS IS SURGERY*

H. S. Lott, M. D., Winston-Salem

It is not all of surgery to cut. The trend of the work and of the teaching today is surgical. The causes for this are two. First, bred by the zeal of the earnest and enthusiastic workman in the recognition and development of real pathology, an audience is told that "there is no remedy but the knife." Second, the student, caught by the spectacular and commercial glare, mistakes "cutting" for surgery, and forgets that cutting is only safe and life-saving when grouped with other "remedial agents", and serves to complete the armamentarium of the surgeon.

Obstetrics and the forces involved in delivery are mechanical. Yet, in their perfection, they only present the complement of a physiologic process, under central guidance and control. The wonder and beauty of this mechanism are beyond our comprehension, and yet their grasp is most essential to the safety of the patient.

Accidents from trauma occuring in the course of labor are of two kinds. First are the unavoidable ones, due to disproportion between the maternal outlet and the passenger. For instance, in a primipara, with nothing unusual in the labor or the conditions surrounding the patient with the parts well in view and a protective hand against the outlet, the final pain, expelling the presenting head, ruptured the perineum with the anal sphincter as well. An immediate repair, picking up the severed sphincter ends and uniting them, gave good result. This was surgery. Again, in a primipara, loaded with sugar, and in the presence of convulsions, under ether, forceps were applied rather high, and, in the course of a careful delivery, the friable muscular structures gave like "pie crust", severing the sphincter and half way up the posterior wall.

An immediate repair in this case did not give good result, conditions of both patient and environment being unfavorable; but after some months, when the babe was weaned, an Emmet repair restored the sphincter, and gave comfort through a subsequent confinement. In every case an immediate repair should be done, thus each time perfecting the toilet and technique, and also the operative skill of the surgeon.

Pregnancy in its progress from conception until closure of the cycle, when the height of the contractile wave has been reached and the uterine musculature will no longer tolerate its guest, presents in one the three foci that always appeal to the surgical conscience: viz., of pain of possible infection, and also of possible disaster from pressure, or from rupture with hemorrhage.

The chief advances in our profession to-day are along two distinctive lines: First, the early recognition of foci of either infective or mechanical menace; and, second, the perfection of toilet and tech-

*Read by title.

nique that permits us to attack these foci at about any anatomic point with a minimum of risk.

Thus have many collective groups of symptoms with a definite focus of origin come, rightfully, into the realm of surgery; meaning an approach to the idealism that gets us beyond the ignorant chains of symptomatolagy alone. Now, any man knows that a woman has a baby, but how many have given this function, the most important of them all, with two lives at stake always, serious and forceful thought, to a realization of just why, and where, and when? Therefore it is the why and the where and the when that brings this function and its product, for safe accomplishment, into the realm of surgery.

The chief dangers in obstetrics are from trauma and infection, and the safe-guarding and prevention of these dangers are surely by surgical means. The trauma may be done by either a "vis a tergo" or a "vis a fronte", and it is surgical conscience and surgical judgment, in the selection and application of aids to delivery, that will prevent or minimize such accidents. Forceful rapid dilatation, podalic version, forceps and cesarean section have each a legitimate place in obstetric service; but, with a thought always of the sensitive mechanism, with its expulsive forces assured, and also of the delicate structures involved, surgical wisdom and surgical judgment should guide the accoucher.

Therefore, while trauma at times is inevitable, infection is not. The fact that a man is in ignorance of, or is indifferent to the perfected surgical toilet and technic of to-day and its life-saving value in obstetric service does not relieve him of moral responsibility in the matter. Every feature in the process of the expulsion of the fetus creates an inviting and receptive soil for infection; and invasion of cellular structures through even a slight abrasion, or break in mucous surface, with all of its disastrous results, is just as inevitable as the infection that comes in the wake of extensive lacerations.

Therefore the toilet and technic of a delivery, in the preparation of both attendant and patient, should be just as carefully observed as the toilet and technic of an abdominal operation—this meaning that the attendant and the patient should be surgically clean.

In this feature, and finally, just one point should be emphasized. The obstetrician,conditions about the patient, and the maternal outlet are the factors, the forces, and the parts involved in labor. Rectal examinations and rectal manipulations of any kind, in the course of labor, are an unwarranted insult, being not only a menace to the toilet of the delivery but a shock to native modesty as well. What real surgeon or obstetrician would put his hand into a sewer just before beginning an operation, or just before delivering a woman?

The fact that this is taught in textbooks, or by authors in prominent journals, does not make it safe or true, but only emphasizes the need for a realization of my plea—that obstetrics is surgery.

THE DIAGNOSIS AND TREATMENT OF PYELITIS

J. D. Highsmith, M.D., Fayetteville

This paper is based upon a study of one hundred cases of renal infection. The purpose of this paper is not to bring forward anything new, but to emphasize the importance of accurate examination and diagnosis, and pelvic lavage and dilatation of the ureters as the treatment of choice. Lesions of the kidney and lower urinary tract of a definite surgical nature, (such as renal tumor, stone and tuberculosis, stone of the ureter, infections of the kidney secondary to hypertrophy and carcinoma of the prostate, carinoma and calculi of the bladder and stricture of the urethra) are not included in this series.

ETIOLOGY

The organisms found to be most frequently responsible for renal infection are the colon bacillus and staphylococci, the colon bacillus being found in ninety per cent of all cases. There are three general routes by which organisms enter the kidney, renal pelvis or ureter. First, the hematogenus route (a) by way of the lymphatics or (b) along the lumen of the ureter. The hematogenous route seems to be gaining in popularity and it is claimed by some that practically all the infections occur in this manner.

The lymphogenous route may be divided into two sub-groups: (a) those in which the infection is carried upward by the lymphatics of the ureter from the prostate, bladder, seminal vesicles and internal genitalia; (b) those in which through communication of the lymphatics of the kidneys and colon the organisms are permitted to be carried from the alimentary to the urinary tract without first passing through the blood stream. In this group of cases I was impressed by the fact that thirty-eight of the patients had lesions of the gastro-intestinal tract. All of these gave a history of constipation of varying degree for which laxatives and purgatives were used. Two of these had chronic cholecystitis and nine had appendicitis and were operated upon before a cure could be produced. Two had pellagra. In several instances the patients suffered from hemorrhoids, and these had surgical treatment. They all had varying degrees of splanchnoptoses. Thirty-two of the thirty-eight were female patients. In fourteen of the female patients salpingitis and in four procidentia were found to be the etiological factors. Among the male patients the presence of infection in the prostate and seminal vesicles was found in fifteen of the twenty-six males in this series. Treatment of the prostate and seminal vesicles was carried out in the usual manner.

AGE

The largest number of cases by far in this series occurred in adult life. Recent observations show that infants and young children often suffer from pyelitis. It has recently been shown that practically all the cases of cystitis in infants and young children are in reality cases of pyelitis. In this series there are six cases between the ages of two and

a half and thirteen years. The youngest patient treated was two and a half years and the oldest sixty-two years.

TABLE OF AGES

2½	years	to	13 years	6
14	"	to	24 "	25
25	"	to	35 "	38
36	"	to	46 "	22
47	"	to	57 "	7
58	"	to	62 "	2

From this table it will be seen that the largest number of cases (thirty-eight per cent) occurred between the ages of twenty-five and thirty-five years.

SEX

In this series seventy-four cases occurred in women and twenty-six in men. This can be accounted for by the fact that certain renal infections occur only in women, such as pyelitis of pregnancy and puerperium, the association of renal infection with lesions of the female generative organs, and the onset of renal infection after extensive gynecological operations. Also, women are more prone to constipation than men.

Twenty of this series of patients gave a history of having had some sort of surgical operation at some time in the past. Eight of the twenty were patients who were operated on account of symptoms of pyelitis but were not relieved of these symptoms. This fact would indicate that they had pyelitis at the time of or before the operation but it was overlooked on account of insufficient study of the case. Six of the eight had simple appendectomies, and two had appendectomies together with suspension of uterus and removal of right tube and ovary.

Four cases in this group exhibited symptoms of pyelitis for the first time after some surgical procedure. As none of this group had undergone a thorough urologic study prior to the operation, it is very probable that this postoperative pyelitis was simply the lighting up of a latent pyelitis. One of this group may be called a genuine instance of postoperative pyelitis, as the symptoms commenced with retention of urine, necessitating catheterization many times.

The remaining eight cases had been operated upon many years before the onset of the pyelitis, as follows: Two for gall-stones; two panhysterectomies; four, removal of tubes and ovaries.

CYSTOSCOPIC DATA

Cystoscopic examinations were made in all of these cases. In thirty-two cases the bladder pictures were normal; in the remaining sixty-eight cases the examination showed changes in the bladder. In forty-seven cases there were varying degrees of hyperemia about the ureteral orifices and in five there was a generalized cystitis. In ten cases there were

flakes of pus adherent to the bladder wall. In five there was edema or congestion of the trigone. The ureter was dilated on the affected side in six cases and the bladder negative. There was edema of the ureteral orifice in five cases.

It is my belief that cystitis is not uncommon in cases of pyelitis. Urography was carried out in twenty-nine of the series, sodium bromide (25% solution) being used by the syringe method. Following the taking of the pictures the solution was allowed to gravitate out, and pelvic lavage was carried out a few times. In no case was there any severe reaction following.

I believe pyelography is indispensable as a urologic procedure in selected cases. Pyelograms have in several instances been a means of information when other methods of diagnosis gave no clue to the condition. We have found it to be our best means of diagnosing ureteral strictures. In several instances it has helped us to differentiate between a simply pyelitis and a surgical condition of the kidney.

SYMPTOMS

The symptomatology is very interesting. An analysis of the most prominent symptoms showed pain in the region of the affected kidney to be the most common complaint, this occuring in thirty of the one hundred cases. Abdominal pain was the chief complaint in twenty-five of the cases, it being chiefly in the upper abdomen in eight of the cases; in the lower abdomen in fifteen, and generalized in two. Bladder symptoms were the most prominent complaint in twenty cases of the series, frequency of urination heading the list with twelve cases; painful urination eight cases. Two patients came complaining of blood in urine, and in five the chief complaint was nausea and vomiting. In eighteen of the cases the outstanding feature was chills and fever. With but few exceptions the cases of pyelitis of pregnancy were the more seriously and acutely ill, the fever going unusually high and being associated with unusual drops. In one case of this variety we were forced to empty the uterus.

DIAGNOSIS

It is quite common for a case of suspected appendicitis to turn out to be in reality a case of pyelitis. It would appear from a review of these cases that the cause for overlooking a renal infection is the fact that frequently a urinalysis is not made. Right-sided symptoms of infection of the renal pelvis and ureter interfering with drainage very closely resemble those of acute appendicitis. The first step in the diagnosis is to determine the presence of pus and bacteria in the urine; the second step is to determine the origin, whether renal or vesical.

There are rare instances when an acutely inflamed appendix or a tubo-ovarian inflammation may give a pyuria, but one should not explore the abdomen for one or the other of these conditions until the source of pus in the urine has been definitely determined. In this way a great many of the exploratory abdominal operations done for hidden kidney

infections will be obviated, and should there be a combination of the two a clearing up of the kidney infection by ureter catheter drainage and lavage will serve to make the patient a much better surgical subject for the abdominal operation.

With a good x-ray picture stone in the kidney and ureter can be excluded. The presence of renal tuberculosis often may be marked by the presence of colon bacilli and such cases are often treated by pelvic lavage. Very diligent searches for the presence of the tubercle bacilli in the direct smear and, when this is negative, repeated guinea pig inoculations will prevent wrong diagnosis.

Stricture of the ureter, hydronephrosis and renal tumor can be differentiated by the pyelogram.

TREATMENT

Irrigations of the kidney pelvis by means of a ureteral catheter are almost as specific in pyelitis as quinine is in malaria. Improvement is usually marked after the first ureteral catheterization, whether you irrigate or not. The question has been raised whether the desired results are produced by pelvic lavage or ureteral dilatation. In this series of cases we overdilated the ureters and irrigated, in some cases daily, alternating with silver nitrate and mercurochrome 220. It is thought that the silver nitrate causes a marked superficial reaction which destroys the mucosa and brings about a reaction in the submucosa. Mercurochrome penetrates more markedly to the deeper structures and comes in direct contact with the tubular epithelium. In some of the more resistant cases it was necessary to drain the affected kidney or kidneys through a retention ureteral catheter, the kidney being treated twice daily through the catheter. No case was pronounced cured until the urine from the kidney was free of pus and smears were negative for organisms, three negative smears being the rule.

The smallest number of treatments required was two; the largest number was twenty.

An analysis of the results obtained in this series showed the following:

Cured	74
Improved	21
Unimproved	2
Died	1

All of this group of seventy-four cases discharged as cured were treated by means of ureteral dilatation and pelvic lavage, mercurochrome 220 and silver nitrate being used.

Seventeen of the seventy-four had the following surgical operations for removal of local foci of infection:

4 Tonsillectomy.
4 Removal of right tube and ovary and appendix.
2 Hysterectomy for pus tubes.

3 Appendectomy.
2 Hemorrhoidectomy.
1. Hysterectomy for fibroids.
1 Perineorrhaphy and suspension of uterus.

The number of treatments necessary to obtain a cure were as follows:

2	treatments	5	cases
3	"	10	"
4	"	14	"
6	"	20	"
8	"	12	"
10	"	3	"
12	"	6	"
16	"	3	"
20	"	1	"

In the group of twenty-one cases which were improved no cure was obtained for various reasons, the chief one being lack of co-ordination on part of patients, they for various reasons failing to return for further treatment. It is possible that of this number a certain per cent have gone on to cure, but proof of this is lacking. There were eleven cases in this group. One patient refused to go on with this form of treatment. Four had chronic infections in prostate and seminal vesicles. Three had chronic infections in uterus, tubes and ovaries and refused to be operated upon. One had chronic myocarditis. One had hyperthyroidism. Of the two cases that were unimproved, one had an organic disease of central nervous system, and one had pellagra very badly.

The case that terminated fatally was a male adult, aged fifty, who had a large diverticulum of bladder and a bilateral pyelonphritis. The patient went into uremic coma following the second treatment and died in less than twenty-four hours. An autopsy showed numerous abscesses in the kidney parenchyma.

Various drugs have been recommended for use in pelvic lavage, but we believe the treatment alternating with silver nitrate and mercurochrome to be the best. We employ a 2% solution of mercurochrome. We start with a .5% solution of silver nitrate and gradually work up to 2%. In conjunction with the local treatment we gave large quantities of fluids by mouth and by rectum, and in some cases by hypodermoclysis. Urotropin, alternating with sodium bicarbonate, were the drugs employed, the urotropin being given in 15 grain doses, together with 20 grains of sodium acid phosphate, every four hours for one week; the next week sodium bicarbonate in 60 grain doses every four hours.

Autogeneous vaccines were employed in twenty cases but we cannot say that they were of any value.

CONCLUSION

I. Pelvic lavage plus overdilatation of ureters is a specific for treating infections in the renal pelvis.

II. In this series of cases 74% of the patients were finally discharged with urine sterile and free from pus.

III. A careful cystoscopic examination should be made routinely in all cases of obscure abdominal pain before patients are subjected to a surgical operation.

IV. More attention should be paid to a routine urinalysis.

V. Local foci of infection should be carefully searched for and proper attention given them. If this is not done they may be factors in contributing to relapses and rendering this treatment inefficient.

VI. We believe the local focus to be in the colon in a large per cent of cases.

DISCUSSION

Dr. W. M. Coppridge, Durham: I want to congratulate Dr. Highsmith on his paper. I can hardly add anything to what he has said, but there are one or two things I would like to emphasize.

The thing that I picked out as being probably the most important is the almost constant association of constipation in cases of pyelitis. We find that in practically all cases, acute as well as chronic, there is constipation. A good many believe that the chief sources of infection in these cases are the teeth and tonsils, but although you find these foci very often, it seems that constipation is more constant. So along with the treatment with ureteral catheterization and irrigation we always pay a good deal of attention to elimination. I think it very important to look after chronic constipation, especially in chronic cases of pyelitis.

The other thing that I think we have not thought of enough in the past is the fact that retention of urine is responsible for a large number of cases of pyelitis. It is well recognized that retention of urine in the urinary tract, however slight, will produce either pyelitis, ureteritis or cystitis. For that reason I think that most of us are dilating the ureters as well as catheterizing and irrigating.

Another class of cases, very difficult to handle, and forming one of our hardest problems, is what to do with the slightly ptosed kidney. A good many cases of pyelitis are dependent on the kidney's being slightly ptosed. It may be ever so slight, or perhaps it may be twisted a little, just enough to interfere with proper drainage, and once infection is started it is very hard to clear out.

It has been a question, with us, whether to operate some of the cases and try to correct the ptosis. In the more marked cases it is undoubtedly indicated, but where you have slight infection, and so slight a degree of ptosis, we feel that operation is hardly justifiable.

I noted that Dr. Highsmith says that he uses mercurochrome and silver nitrate. I cannot say that we have had as good results with mercurochrome as with silver nitrate. I believe most men doing urology will say that silver nitrate is the most valuable drug that urologists have.

I think mercurochrome is a great drug, but I have never felt it could be substituted for silver nitrate. I think if it is used in weak solution, one-half of one per cent, or even one-fourth of one per cent, not used with too much pressure, but just enough to have it flow in and flow out, that we shall get very little in the way of damage to the ureter and kidney. It clears infection better than anything we have used.

Dr. W. L. Jackson, High Point: I know one case frequently treated by the irrigation method which was temporarily cured, or apparently so, but every few weeks the trouble would reappear. I gave this patient intravenous 2% mercurochrome, which seemed to effect a permanent cure. I would like to hear from Dr. Highsmith along that line.

Dr. Highsmith, closing the discussion: In regard to the treatment, we have found, after using both independently, that alternating the mercurochrome with the nitrate of silver gives the best results. It has been proven experimentally at the Mayo Clinic that when these drugs are used alternating the silver nitrate causes a marked reaction in the kidney pelvis which permits the mercurochrome to penetrate more deeply.

We did pyelogrames in 20% of this series, using a 25% solution of sodium bromide, without any untoward results. Sometimes there was severe pain, which was controlled with hot sitz-baths and morphine together with atropine hypodermically.

I think that the reason so many of these cases recur is the slightly movable kidney, which causes a kink in the ureter, thereby interfering with perfect drainage. I think in all probability more of these kidneys should be suspended.

I thank you gentlemen for your kind discussion of this paper.

PRENATAL CARE—A RESPONSIBILITY OF THE OBSTETRICIAN

K. P. B. Bonner, M. D.

Director Bureau of Maternity and Infancy, State Board of Health.

The practice of obstetrics is an art as well as a science. As a science, and a branch of medicine, it has passed through wonderful development in the past half century and has fully held its own in the general advancement of other sciences entering into the practice of medicine. In no field of medicine is the responsibility more grave, nor the necessity for the exercise of common sense and sound judgment more imperative. The successful practice of obstetrics, and the word successful is used in this connection in the broadest sense, calls alike for the highest order of skill of physician and surgeon, for it is no uncommon thing for an obstetrical condition to pass from a medical condition to a most serious surgical emergency in the twinkling of an eye. The really competent obstetrician is prepared to meet such conditions and handle the situation; is able to transform himself from physician to surgeon as occasion demands.

The obstetrician not only assumes responsibility for human life but has the responsibility doubled, doubled in that two lives are at stake—

the mother and her unborn babe. Added to this double responsibility is that of the possibility of the development of serious conditions destructive to the life of mother and baby upon short and ofttimes no preliminary warnings. While it is generally admitted that the practice of obstetrics is a specialty requiring the highest type of skill, yet the fact remains that it can never be developed as such except in the larger centers of population. Our social and economic conditions are such as to make this impossible. The act of child-bearing is generally distributed. It takes place in the hamlet and village as well as in the city. It occurs in the home of the farmer as well as in the small home of the mill operative. It happens in the cabin at the top of the mountain peak as well as in the shack of the dweller in the fastness of the swamp. Per se, the relative birthrate of the rural population greatly exceeds that of the urban. On this account the general practitioner will always be called upon to do obstetrical work. The physician in the rural and remote sections has no choice but to do obstetrical work, whatever his inclinations.

Having undertaken obstetrical work, the physician automatically assumes all the responsibilities that are carried therewith. It is therefore incumbent upon him to fully realize the responsibilities he is assuming and be prepared to discharge the duties in such a manner as will assure safety to mother and child and reflect credit upon his skill as an obstetrician. In justice to his patient and himself he should never be satisfied with a less degree of skill.

The principal advancement and progress in the science of obstetrics has been directly concerned with the management of labor and the prevention of complications attendant upon delivery, notably the prevention of puerperal infections. The importance of prenatal care has not received the serious consideration to which it is entitled, nor are the potentialities for harm fully recognized. As a general principle it is universally acknowledged by medical men. Unfortunately, it is done from the standpoint of a broad principle having no personal application, and yet prenatal care is the most important part of obstetrical practice. Lack of proper supervision during pregnancy is most disastrous in its remote effect upon the future life and health of the mother and child. It is because of the remoteness of the baneful effects initiated in this period that we are prone to shirk our plain duty and thereby fail to measure up to our responsibilities as obstetricians. In most cases they begin as disturbances of function, disturbances that are easily corrected at first appearance. The period of responsibility of the obstetrician extends from the beginning of pregnancy to the end of the puerperium, and no physician should undertake obstetrical work who is unwilling to recognize this statement to be true. Too many of us still retain the narrow and restricted idea that the term obstetrics is limited to the management of labor and the confinement period. It is high time that such ideas be discarded forever. Common justice to the most helpless class of our citizenship demands this.

The act of reproduction is a natural process and should therefore be natural in termination, with no attendant mortality. Theoretically this

is true but in practical application far from true. The present day artificial mode of living is very largely responsible for the development of the diseases and disorders of pregnancy. People no longer live the simple life, no longer live close to nature. The diseases and disorders of pregnancy directly affect the life and health of the mother and baby. As yet no means have been devised whereby it is possible to determine the complete end-results of lack of prenatal care; to measure the totality of damage. Sufficient data are available, however, to prove conclusively the extreme importance of a scientifically supervised antenatal period.

Figures for North Carolina show that of 91,498 births in 1921, 526 mothers died in the pregnant state and 4,042 babies were stillborn. For the year 1922 87,107 births were recorded and 507 mothers paid the supreme penalty, while 3,699 babies never lived after birth. We do not pretend to assert that all of these deaths resulted from a lack of proper prenatal care, but a study of the causative factor of these deaths will reveal that it was the predominant cause.

ANALYSIS OF CAUSES OF DEATHS IN PREGNANCY

Accidents of pregnancy	36
Puerperal hemorrhage	50
Other accidents of labor	58
Puerperal septicemia	116
Puerperal phlegmasis alba dolens, sudden death	3
Puerperal albuminuria and convulsions	239
Following childbirth	4
Puerperal diseases of the breast	1
Total deaths, puerperal state	507

This presentation does not take into consideration the high infant mortality immediately following birth, but it will startle you to learn that more than three-fourths of all infantile deaths are in the first six months and most of these are in the first few weeks of life. A study of the cause of these deaths reveal the powerful influence of a neglected prenatal period. Stillbirths, premature births and congenital debility caused the death of 5,558 of the 11,684 babies under two years of age who died in North Carolina during 1922. This takes into account no other causes having a direct effect on infant mortality that may have been produced by lack of prenatal care. Does not this indicate a general lack of prenatal care, when nearly fifty per cent of infantile deaths occur from two causes? Added to this is impaired health and remote premature death of mother and baby. No human means has yet been devised by which these last mentioned end-results may be measured, yet no one questions the truth of this assertion. Consider the large number of infantile deaths caused by premature delivery, lack of vitality, or death before delivery. A large proportion of these could be prevented by proper care of the mother during pregnancy, and while syphilis is the great factor in this class of deaths, early treatment would tell a new story. How many abnormal labors, with resulting deaths, might be prevented with proper care in pregnancy? Review your past experiences

and recall to mind the many cases of children handicapped physically from birth, and the many mothers brought down in early middle age with a chronic nephritis whose history dated back to an early pregnancy, all as a result of a neglected antenatal period. We might go on indefinitely reciting instances illustrating the vital importance of this subject, but will conclude this section by referring to that terrible malady, eclamsia, that proper prenatal care would cause to become unknown, a disease that carries one of the highest mortalities known to science.

A review of the experiences and an analysis of the record of 852 obstetrical cases occuring in a practice of seventeen years brings out some very interesting information. The time has been divided, for purposes of contrast, into two periods. The first period covers the early years of this practice, in the days when the importance of prenatal care was very little appreciated by the public and the young physician was struggling to gain the confidence of the people he served in his professional ability. In those days he was fortunate if he could be called after labor had set in. The later period is that covered after the confidence had been gained and gained sufficiently to induce the expectant mother to place herself under medical supervision early in pregnancy. During the first nine years twenty cases of eclampsia occurred in a series of 270 cases, as compared with only 8 cases in the succeeding 8 years in a series of 582 cases. The contrast relative to stillbirths is almost as sharp. In the first 270 cases, during 9 years, 32 stillbirths occurred, and only 24 stillbirths occurred in 582 cases in the following 8 years. With shame are four maternal deaths admitted, at least three of which could have been prevented. One died of postpartum hemorrhage, two of eclampsia, and one died at the very outset of labor presumably from acute cardiac dilatation. Numbers of instances may be recalled during these years of experience in which mothers would come under observation in whom the history of the disease could be clearly traced to a neglected pregnant state. While these figures are lower than the average in the State, a study of the etiological factors shows that the vast majority of all these lives might have been saved if the proper prenatal care had been given.

The statistical figures as applied to North Carolina and the experience of these years in a fairly active practice have been responsible for much serious thought. Out of these have come truths that can best be expressed in epigrams. As a choice between medical attendance in acute illness or labor, one should choose attendance in labor. As a choice between medical supervision during pregnancy or labor, one should choose the supervision during the prenatal period. Proper prenatal care means normal delivery at term. The hazards of the pregnant state occur as a result of the sins of omission rather than commission. A normal woman never has an abnormal delivery.

In closing we cannot resist repeating that the responsibility of the obstetrician begins with conception and ends with the final discharge of the patient at the end of the confinement period. Have we given the necessary prenatal supervision to our obstetrical cases in the past? Have we recognized our personal responsibility? Have we recognized the importance of this supervision? Finally, we most earnestly enter a plea

for future careful and thoughtful attention to this field of medicine; a plea for a square deal for the mothers and babies in this State.

DISCUSSION

Dr. A. C. Bulla, Raleigh: I am not a general practitioner, have never practiced, but I have been associated in a general way with one ever since the day I was born, and therefore have some knowledge of general practice and the problems that the average physician doing a large country practice has to come up against and to solve. I am particularly interested in the subjects being discussed in this section, especially the one which the Doctor has so thoroughly covered in his excellent paper.

The 2,300 physicians of this State do not realize that there are twice this number of midwives, and then some, delivering approximately one-third of all births occuring in the state. In other words, they attend about 30,500 mothers each year, who pass through the valley of the shadow of death with no other ray of hope, to dispel its gloom, than that of a midwife.

The midwife menace in this State probably does not differ from that of other states, but it is one which the medical profession should give careful consideration. It is one which is going to be solved sooner or later and, to my way of thinking, the sooner the better for all concerned.

The practice of midwifery cannot be abolished until there is something which can be substituted in its place—something better—and the medical profession is the only substitution. It realizes its responsibility but cannot, under existing conditions, assume it. County and city boards of health have the power to pass rules and regulations prohibiting the practice of midwifery and will be glad to do so whenever the physicians are willing to assume the great responsibility.

Dr. H. C. Dixon, Madison: I wonder if it would be practical, through the aid of this Section, to see if it is possible to have a question on the birth certificate asking the number of weeks or months the mother was receiving prenatal care. I have an idea that in a few years we would have some interesting statistics, and at the same time it would drive home to the general practitioner the necessity or great importance that we believe lies in prenatal care. That is only a suggestion.

Dr. John A. Patterson, Concord: I desire to make a motion that this Section go on record as passing a resolution asking the county boards of health in every county have every midwife who attends an obstetric case stand some satisfactory examination by at least three doctors in that county, as this would save a great number of women from esepsis and other troubles.

Dr. Patterson's motion, being duly seconded, was put to vote and carried.

Dr. Bonner, closing the discussion: I have nothing to supplement what is contained in the paper. It is a subject to which we must of

necessity give very serious thought if we expect to lower our infant mortality as well as maternal mortality. It is too high, and proper prenatal care will largely reduce it in this State.

BLADDER DISTURBANCES IN WOMEN

Frank D. Worthington, M.D., Charlotte

Dysuria and polyuria are such frequent complaints with women that it is not at all unusual for them to escape the attention they rightly deserve. A certain hesistancy in informing the doctor of the ailment and the fairly prevalent belief, particularly among married women, that the symptoms are unworthy of comment, combined with the knowledge of the doctor that the condition is frequently transient and of little importance, all conspire to produce unnecessary discomfort and on occasion positive pain. The real frequency of bladder disturbances can only be estimated by continually questioning the patient directly when obtaining a history.

Bladder disturbances may be divided into two general classes: (1) those caused by lesions in the urinary tract; (2) those caused by conditions outside the urinary tract. Of these, those falling into the second class predominate by a large majority in the female, due to the anatomical relationship of the bladder to the genital organs and the frequent lesions of these organs, both congenital and acquired, particularly following pregnancy and labor.

Considering the lesions of the urinary tract itself, it is not contemplated in this article to treat of them in detail, but suffice it to say that the cystoscope is indispensable in intelligently diagnosing and treating them and, I feel, is just as essential an instrument in the armamentarium of the gynecologist as the Sim's speculum. Proper correlation of the importance of intra-- and extra-vesical lesions can best be determined by investigating both fields and comparing them.

The microscopic urinary findings are the most important indicators as to the advisability of cystoscopic investigation. It is not at all unusual in women of a nervous, highstrung temperament to elicit the complaint of frequent and at times painful micturition. In the absence of microscopic pus in the urine and any pelvic disease, the condition can be regarded as a neurological manifestation and treated as such by mild sedatives, changing the reaction of the urine, internal lavage by copious intake of fluids, etc.

On the other hand, persistent symptoms, pyuria or hematuria demand further investigation. They may result from lesions anywhere from the kidney, such as renal stone or pyelitis, to the urethra itself in the form of a stricture, etc. Kidney and ureteral lesions require the appropriate treatment, determined by cystoscopic, radiographic and microscopic examination. Bladder conditions, too, require the proper treatment, whether it be the removal of a tumor or simple irrigations. The large majority of bladder cases in women prove to be a simple cystitis, effectively treated by bland irrigations and instillations of silver nitrate.

A few have been less than this, the inflammatory process being confined to the trigonum and best treated by dilatation of urethra, insertion of a Kelly cystoscope and direct topographical application of relatively strong solutions of silver nitrate to the affected area.

Being essentially interested in the extravesical cases of bladder disturbances I shall take them up in more detail, in the order of their frequency as I see them.

(1) Varying degrees of descensus uteri, to the extreme complete prolapsus. The results obtained from restoring the pelvic floor and genital organs to a normal position are among the most gratifying in the field of surgery. The symptoms of descensus are multiple but those referable to the bladder often predominate.

When the desensus is moderate and cystocele only small, good results are obtained by repair of the perineum and suspension of the uterus abdominally. The methods of suspension are numerous but to me a modification of the Gilliam by shortening the round ligaments extraperitoneally seems the most logical, does least to disturb normal anatomy and has served to permanently hold the uterus in position. Fixation of the fundus to the abdominal wall has distinct disadvantages, whereas changing the normal attachments of the round ligaments to the fundus not only frequently fails to preserve a normal position of the fundus but defeats the purpose of the operation when done for bladder symptoms by causing a distortion of that organ. When there is a marked cystocele present it should be repaired by plication of the supporting fascia.

In complete prolapse in women past the menopause we have gotten most satisfactory results with the Watkins interposition operation, and it offers a cure to many who would undergo any obdominal operation with unwarranted risk to life. When any and all kinds of surgical procedures are contraindicated a properly fitting pessary will support the bladder, prevent the accumulation of residual urine and obliterate a fertile field for an infectious cystitis.

(2) Retroposition of the uterus causes bladder disturbances by the pull of the cervix on the base of the bladder. Simple suspension is the treatment of choice.

(3) Pelvic Inflammatory Diseases—In this heading I include all inflammatory conditions, whether their origin be specific, tuberculous or from any other cause. The adhesions present distort the vesical wall and the inflammatory process involves the wall, with resulting edema and thickening. Freeing of the bladder and extirpation of the pathological tissue allows the bladder to resume a normal condition.

(4) New Growths—Bladder disturbances are uniformly present as an accompaniment of new growths, whether they be due to mechanical pressure or malignant invasion. The former requires surgery; the latter careful consideration before surgery is practiced. If a carcinomatous ovary has invaded the bladder wall by direct extension, removal of all malignant tissue may result in a permanent cure, since this type of tumor is relatively benign. If, however, the bladder is invaded by a carcino-

matous process extending from the cervix or fundus little can be hoped for by operation.

(5) Acute anteflexion may produce frequency of micturation by pressure upon the fundus. This is usually a congenital condition. A normal pregnancy usually relieves it and in other cases a pessary or manipulation may suffice.

CONCLUSIONS:

(1) Bladder disturbances in women are of two origins:

(a) Intravesical.
(b) Extravesical.

(2) The latter predominate.

(3) Cystoscopic measures are essential aids in arriving at the true condition.

(4) Proper treatment gives gratifying results.

DISCUSSION

Dr. C. M. Strong, Charlotte: Dr. Worthington's paper covers the subject very fully and is well written. I agree with Dr. Worthington, but there is one thing he did not speak of, that is, postoperative cystitis, by which I mean those cases in which you cannot find the pathological condition. The patient comes back to you with this trouble and it is very hard to cure. There are several causes for this condition, and I think one is that we do not give our patients the proper preoperative care, especially the bladder. I think it is very important, in abdominal and pelvic cases, that we should get them in good shape before we operate. Second, I think we (I speak for myself) use the bladder like a punch bag, we get in it and gouge around and beat it and have no conscience at all as to how we treat it, and about the third or fourth day this inflamed condition comes along and gives a whole lot of trouble that may extend over a period of months. We have to treat them the best we know how, and they often go away to some other doctor with the complaint that the operation has made them worse, for if there is anything that is distressingly painful, it is cystitis; it is a terrible thing for either a woman or man to have and what they want is relief. If a patient has cystitis following an operation, no matter what has been accomplished in a beneficial way, the suffering from cystitis impresses itself more strongly on their mind than anything else. I had hoped that the Doctor would say something about this; his handling of the subject is very good indeed.

Dr. R. T. Ferguson, Charlotte: I agree with Dr. Worthington that in all cases a cystoscopic examination should be made. The point that Dr. Strong brought out was very good indeed and I want to know what Dr. Worthington has to say on that subject. Cystitis following pelvic operations is a fairly common occurrence and its etiology should be carefully worked out.

Dr. Edward R. Hipp, Charlotte: I think many cases of so-called postoperative cystitis, when you find out the true condition, are either

urethritis or trigonitis from poor technique by the nurse or doctor in catheterization after operation. Too little attention is paid to the care in postoperative cases that require catheterization.

Dr. Oren Moore, Charlotte: Although I have just come in and did not have the pleasure of hearing the paper read and the discussion which followed, I had an opportunity of reading the paper before I came and I subscribe very strongly to what the Doctor says.

I have in mind a case of extravesical disturbance in which there were postoperative adhesions which pulled the bladder up in a tent-like apex, where all symptoms referred to the bladder and all were outside. We opened the abdomen and released the adhesions, and all symptoms promptly disappeared. In this case there was no cystitis or local inflammation of any kind, but long drawn out adhesions which fixed themselves to the bladder and pulled it up to a point where the patient suffered excruciating pain.

I do not know whether it has been brought out or not, but I think one very important thing is that work on the bladder in a female should be done by a man familiar with female generative conditions.

I subscribe very sincerely to everything Dr. Worthington has said and I enjoyed the paper very much.

Dr. Worthington, closing the discussion: The discussion has brought out but one question for me to answer, namely, the cause of postoperative cystitis. When catheterization is repeatedly necessary it is absolutely impossible, with the best technique, to prevent a bladder infection. We are accustomed to supplement these catheterizations by irrigations of boric solution followed by instillations of silver nitrate, 1-1000 solution, and in this way combat infection.

Rough manipulation and trauma to the bladder during the operation will produce edema and irritability, and this fact emphasizes the importance of restoring the bladder to as nearly normal position as possible.

PREMATURE SEPARATION OF THE PLACENTA—REPORT OF A CASE

Hubert B. Haywood, Jr., M.D., Raleigh

This condition remained an obscure one for many centuries. In 1775 Rigby, an Englishman, distinguished between cases of detachment of the placenta situated above the zone of the dilatation of the uterus and those below that zone. In the latter class, owing to the fact that the placenta must separate to allow the passage of the child, the hemorrhage is unavoidable, while in the former the hemorrhage is accidental. British authorities still use the terms unavoidable hemorrhage for placenta praevia and accidental hemorrhage for premature separation. De Lee, of Chicago, suggested the term Abruptio placentae, meaning a forcible tearing of the placenta from its normal site. In reality it is an abortion at or near term.

Clinically it is usually easy to differentiate between placenta praevia and abruptio placentae, but De Lee is convinced that many of the milder cases of accidental hemorrhage are due to the detachment of the placenta situated low in the uterus but just above the zone of dilatation. The case then partakes of the character of both conditions.

Complete separation of the highly situated placenta is rare, not oftener than once in 500 cases. The record of the Chicago Lying-in Hospital was 12 cases of complete detachment in 15,000 deliveries, but in addition there were 31 cases of partial detachment, the placenta showing a firm ante partum clot.

Accidental hemorrhage occurs oftenest at the onset of or during labor at term, but it may occur during the last twelve weeks of pregnancy.

The causes are two: (1) diseases of the placenta and decidua; (2) trauma. In all probability the trauma acts on a diseased organ, a healthy organ as a rule being able to tolerate severe traumatism of various kinds. Chronic endometritis plays the most important role among the diseases, gonorrhea being often the cause of the endometritis. Nephritis is a very common cause. Fehling showed the coincidence of placental infarcts and hemorrhages in chronic nephritis. Degeneration of the decidua, myometritis, syphilis of the placenta, and acute infectious diseases with decidual hemorrhage have also been found. Even severe mental shock has been found as a cause. A slight trauma when one of the above conditions exist may be an exciting cause.

During labor several accidents may cause detachment of the placenta, as sudden emptying of a large polyhydramnos, or loosening of the placenta which sometimes follows the delivery of the first twin, the retraction of the uterus above the child stopped in its progress by an obstruction in the pelvis, the operation of version and traction exerted on the placenta by a cord too short.

Absolute rules for treatment cannot be laid down. The wisest treatment is that which empties the uterus most quickly with the smallest amount of danger to the mother. In spite of any method used the baby is dead.

Williams believes this a more common cause of hemorrhage than placenta praevia.

The Sloan Maternity showed 57 separations in 5,900 labors. Dublin Rotunda showed 70 in 6,453; New York Lying-in Hospital none in 10,000.

The management depends upon whether or not labor has started and the degree of dilatation, but under any circumstances there are three indications to be met. The uterus must be emptied, hemorrhage stopped and anemia combated. Should the cervix be soft and easily dilatable forceps or version may be employed, but if firm, with concealed hemorrhage occurring, section is indicated, which may be followed by hysterectomy should the bleeding continue. With the emptying of

the uterus bleeding may continue, not only from atony of the organ but also, in certain areas, blood has infiltrated into the muscular fibres and rendered them incapable of contraction. A hysterectomy is safest in case of doubt.

With the best of treatment the maternal mortality is about sixty per cent.

REPORT OF A CASE

Age thirty-one years. Third pregnancy. Past medical history showed measles and mumps. Menses began at fourteen; regular duration four days. One living child eighteen months of age. Previous labor was normal. In her first pregnancy she miscarried at the second month, the miscarriage resulting from an automobile ride. Her last menses were in October, 1920. In other words, she had not menstrated since her last baby was born. She felt quickening October 18, 1922. She had slight nausea and vomiting during the early months of her pregnancy for a short time. Urine was examined every two weeks after the second month. One specimen during the month of November showed a faint trace of albumen. This disappeared and did not show up in subsequent examinations.

On January second she was visited by me, at which time she felt well. Her urine was normal; blood pressure was 140 systolic, 70 diastolic. This was an increase of twenty points over her usual reading. On the morning of January third she got out of bed hurriedly and at that time she was conscious of a pain in the abdomen. Her head began to ache severely. She noticed that she was having a profuse hemorrhage from the vagina. She had a most tense feeling in the abdomen, which got decidedly worse as the minutes went by. It was necessary for her to go back to bed on account of the pain in her head and abdomen.

I saw her within fifteen minutes of the time her symptoms began. She had all of the signs of an internal hemorrhage, with some external bleeding. There was an increasing palor and anemia. Her abdomen was very tense and distended much beyond an eight months' pregnancy. Her chief complaint was tenseness in the abdomen. There were no uterine contractions. Her pulse was rapid and feeble. Blood pressure had fallen to 90 systolic, 50 diastolic. Vaginal examination showed that the cervix would admit one finger readily. The head was high up in the uterus. The bag of waters was intact. The placenta could not be felt. There was free bleeding present. The placentalbruit and the fetal heart sounds, which could be readily heard the day before, could no longer be heard. An increasing dimness of vision started and soon all save light perception was lost.

A diagnosis of abruptio placentae was made and the patient was removed to the hospital for Caesarean section. There the patient was catheterized and a specimen of urine examined. It showed no albumen and no casts. She was operated upon by Dr. Hubert A. Royster under morphine and hyoscin and novocain anethesia. A completely detached placenta was found, and a large amount of clotted blood removed. The placenta had been attached at the fundus normally.

The placenta and fetus were removed without rupture of the sac. The placenta and uterine tissue showed hemorrhage areas. The uterus was very large, edematous, and mottled. The uterus and abdominal wound were closed in the usual manner. The surgeon used a high right rectus incision five and a half inches long.

The patient did not void this day and neither was there any urine on catheterization. The blindness continued, and she was put on hypodermoclysis and salines by the Murphy drip. No urine was excreted for the first twenty-four hours. The specimen finally obtained showed a large amount of albumen and numerous hyaline and granular casts. Her blood pressure rose as high as 180 systolic. She never showed eclamptic symptoms save blindness, which rapidly disappeared. She made an uninterrupted concalescence, and an examination of her urine on March 13, 1923, showed a normal condition.

I am indebted to Dr. Carroll, who saw this patient in consultation with me, and to Dr. Royster, who operated upon her.

DISCUSSION

Dr. O. B. Ross, Charlotte: I think that this is a very interesting subject that Dr. Haywood has brought up, and one to which we should give attention. These cases are so absolutely shocking that you never forget them, and I would like to call your attention to a case that I had somewhat of this type. This was a case of premature separation of the placenta. The interesting thing was the tremendous amount of abdominal pain that came while the woman was down in a stooping position cleaning the floor. Diagnosis was made and she was rushed to the hospital. We waited a few minutes to see if she reacted from the shock, which she did not do. Increasing hemorrhages occurring, podlaic version was done, but she died from the hemorrhage. I think the suggestion of cesarean section is good if you have time. These are very tragic cases and should be diagnosed immediately and the proper procedure in the particular case followed.

Dr. E. T. Dickinson, Wilson:

I want to call attention to one point on cervical dilatation. If the cervic can be dilated readily, Dr. Haywood says, or if it has already dilated, the case is one that can be delivered from the vagina. I think there is no cervix that can not be dilated. I am frequently called upon to do cesarean section in great emergency, but the emergency case is lost if I take time to do cesarean section. These cases of detached placenta praevia are not cases for cesarean section; they are cases for immediate relief, to be delivered, cases at least to have hemorrhage stopped immediately. It is easy enough to get rid of the emergency while you would put the water on if you are going to do cesarean section, and to go through all this moving to the hospital and so forth to do cesarean section is an absurdity. It is so easy, and requires no skill, to do dilating of the cervix, and delivery will occur in twenty minutes, more often ten, and very frequently in three, and you get rid of the entire danger. I have heard it said by some that these cervices can not be dilated; that the cervix will barely admit a finger and that it will take hours to dilate, but the man who says that does not know. It is very easily dilatable. The cervix that will admit my index finger tightly can be dilated and the woman delivered in twenty minutes, or thirty at the outside. The cervix has the nature in itself of getting away from whatever is in it, and if you merely insert a finger in the cervix and leave it there, and do nothing

more, in a certain number of minutes you will feel it getting away from the finger. Presently two fingers will go in, and if you leave them there a few minutes you will feel the cervix getting away and presently you will have three fingers in the cervix, and when three are in you can call for the cloth to lay the baby on. This is not theory; I have been doing it for twenty years. I did one two or three weeks ago, a primipara of nineteen years. The woman had not been in labor at all. She awakened her husband at four o'clock in the morning (there had been no alarm and no idea of labor's being on) with convulsions. In thirty minutes I had the woman delivered, leaving the child and mother in good shape and no lacerations of the cervix. There is no need of lacerations of the cervix or perineum, for you can tell as positively as to whether you are getting in trouble dilating the cervix as you can in dilating a rectal sphincter. You know the amount of tolerable pressure, a feeling just when it will tear, by its giving away from your hand. I see that my hand is thoroughly lubricated with green soap. It would be much more difficult if I did not use an ample amount of green soap to help my hand go up and, for more rapid dilatation, in getting in three fingers. This is a very important thing, I think, in these cases that are bleeding—to deliver and get contraction of the uterus immediately, without so much fuss about getting ready to do something when it will be too late.

Dr. Oren Moore, Charlotte: At the risk of boring this audience I would like to discuss this paper, for it seems to me of great importance.

I investigated abnormal bleeding in pregnancy and found three per cent were bleeding from premature separation of the placenta, but I want to restrict that to the latter part of pregnancy. The symptoms are as Dr. Haywood has indicated in his paper, symptoms of internal hemorrhage. He calls attention to the methods that have been applied, putting a sheet around the waist, tying at the ends and introducing two broom handles and winding opposite each other, one on one side and one on the other, to bring the required amount of pressure on the uters; the so-called Spanish windlass. Diagnosis should be made before you attempt any procedure at all. That brings us to the point of selection of the operation that you will do, and that is the biggest point in the whole argument—what you will do for relief. There can be no meeting of physicians where they will agree on which will be better, version and immediate delivery or cesarean section. Anywhere there will be a wide difference of opinion. The explanation is quite obvious. If a man is more of a surgeon than an obstetrician he will select the cesarean section, and if it is the other way round he will select the natural way of delivery. If he is a follower of Potter, he will use Potter's version; if he is a follower of De Lee, prophylactic forceps. That depends on his training.

I have heard Dr. Dickinson make this statement before, and I make no attack on his integrity, but I must say that I am amazed at the dogmatic statement of the Doctor that in making these deliveries he can dilate every cervix, and, further, that no man who says it cannot be done in that way has tried to do it. As I say, I make no attack on the Doctor's

integrity, but I will say that he has unusual ability so far as my contemporaries and I are concerned.

Dr. Ross, who previously discussed this paper, was with me on a case in which we had to do version. Dr. Stokes, this will be interesting to you. The lady in question had an eclampsia after six babies. She had an infection after one delivery and you were called on to do the surgery. It evidently had required tremendous drainage and she recovered with hernia in which were incarcerated the intestines. She became pregnant again and was sent to me. The only way out was dilatation, and Dr. Ross and I tried for an hour and forty minutes to dilate and eventually got it done at the expense of the mother's and baby's lives. We tried and tried to dilate. We did not want to tear it, and Dr. Ross would take turns with me. Within the last six weeks I was called on to dilate and deliver where there was no question as to a cesarean section, and it took an hour to do that dilatation. I admit that most of them are dilatable and most will permit of version. To the usual practitioner the best way is to dilate and do version—that is the simplest way to relieve the patient. Certainly in home surroundings in isolated regions it is the way out, and I would not attempt the cesarean section. Dr. Dickinson must have been a good deal more competent than my contemporaries or I have been, though I do not say that he is not doing it if he says he is. One individual you meet has more ability than another in that. Potter's method depends on Potter; Asher B. Davis's depends on him; Dr. Dickinson's method of dilatation and version depends on him. The best thing is to get rid of the contents of the uterus whether by section, version or forceps. De Lee himself said that five thousand women died last year from pacenta pravia or abruptio placentae. It is of tremendous importance to us and it is right that it should be discussed here.

Dr. E. S. Boyce, Rocky Mount: Two or three years ago Dr. Dickinson landed on me about cesarean section, and I got the impression that he did not do it. Since then I have talked to the Doctor about some cases, and he told me that he uses cesarean. I was in a hospital last summer in Wilson and heard a little cry, and when I asked what it was they said it was Dr. Dickinson's cesarean.

Dr. Dickinson: That was not one of the cases under discussion, but was one that needed a cesarean section.

APPLICATION IN PREGNANT WOMEN OF WIDAL'S HAEMOCLASTIC LIVER TEST

Oren Moore, M.D., F. A. C. S.
Harvey P. Barret, A.B., M.D.
Charlotte

It is probable that no condition has elicited more interest or called forth more investigation of both laboratory and clinical nature than that group of diseases loosely designated toxemias of pregnancy, and in spite of this vast volume of expended energy, the net results, scientifically speaking, are practically nil and can be summed up in a statement of

clinical manifestation and a more or less varied classification of symptomatic exhibitions. It may be said, however, that as a result of study there has been a crystallizing of opinion that the obvious clinical manifestations of toxemias are, roughly speaking, about the same as the symptoms of acute Bright's, even though laboratory findings are not those of acute kidney breakdown. Following this conclusion, it is evident that investigators must seek for a primary factor for what later appears as a clinical failure on one hand, or acidosis on the other, and at this date all roads would seem to lead, theoretically at least, to a primary liver involvement as the vicious factor. Now, if such conclusion is correct theoretically, it can be proven practically if a definite liver test can be produced and applied to every pregnant woman and the case followed both clinically and historically to a clinical termination. This is what we have attempted to do, and the test on which we wish to make priority report in this paper is predicated entirely upon the above theoretical conclusions and is the application in pregnancy of Widal's haemoclastic test for liver function, which, so far as we are able to learn, has never before been attempted. A brief resume of Widal's theory and technique follows:

The statement by Widal, Abrami and Incovesco (Presse Medicale, December 11, 1920) that "leukopenia following a standard protein meal is to be regarded as a delicate test for the presence of hepatic insufficiency" has, so far as we know, been completely accepted and certainly has been confirmed by other observers: i. e., Roche and Gautier (Presse Med., March 11, 1923) "Injection of Pleural and Ascitic Fluid." Also Feinblatt, (A. M. A. Jour., March 3, 1923) who concludes from a study of eighty normal individuals that "The normal response to the conditions of Widal's liver function test is uniformly one of leucocytosis" and whose reasoning is based upon the interference in liver insufficiency with the proteopexic function of this organ, with a resultant mild protein shock, due to the unloading into the circulation of unfixed proteins. In Widal's original paper he calls attention to other accompanying phenomena, such as an increase in coagulability of the blood, a drop in blood pressure and an increase in the refractive index of the blood serum, which may or may not be regarded as controls of the primary leukopenia.

Technique of the test: The subject applies at the laboratory after five hours of fasting, a white blood count is made and a standard protein meal of 250 c.c. skimmed milk is given, then at half hour periods three other white blood counts are made. According to Widal, and as confirmed by Feinblatt, whose composite curve obtained by averaging the figures on his eighty subjects ran as follows: 7,379, 8,856, 9,762, 9,779, there should be a distinct leucocytosis in the normal liver cases.

Viewed from the above light, in an application of Widal's test in twenty pregnant women, our results show a decided deviation from Feinblatt's normal, and when checked against history and clinical findings have led us to believe that this test will prove of great value in predicting the outlook in any given pregnancy in so far as toxemias are concerned. The study of this series has resolved our findings into four groups or classes. Group 1 is composed of the historically and clinically normal

cases. The behavior of the postalimentary curve is illustrated by one example, Mrs. J. W. A.: 12,000, 14,700, 15,100, 11,700. Group 2 is composed of the pernicious vomiting type; example Mrs. N. E. L., who required interruption of pregnancy at the eighth week: 18,200, 12,200, 10,300, 8,600. Group 3 is composed of post-eclampsias. After a true clinical eclampsia had been relieved by appropriate treatment, a test was made three days later; example Mrs. R. McL.: 26,400, 29,000, 28,900, 27,800. Group 4, pre-eclamptics (explanation); example, Mrs. W. C. P.: 13,500, 11,700, 11,100, 11,300.

There is still another group of patients who do not show either a leucocytosis or a leukopenia and whom we have not definitely assigned to any group, but who we believe can be rightly placed in a class of insufficient liver function, since conformity to Widal's test demands a rise. These cases, while showing no decrease, certainly are negative as to the normal. Our argument, therefore, is that they are mild liver insufficiency cases who will probably at some later date, unless appropriately treated, show up as true toxemias. Example: Mrs. G. L. D.—10,600, 10,300, 10,900, 11,400.

Conclusions: First, the group of conditions known as toxemias of pregnancy, when tested by Widal's method, show a deviation from the normal leucocyte curve following a standard protein meal, which deviation is characterized by a decided lowering of the leucocyte count for the three half hour periods. Second, the degree of leukopenia parallels clinical manifestations as to severity. Third, judging from a total of twenty cases tested, it would appear that the liver insufficiency in a given case is the basis of a subsequent toxemia. Fourth, we clearly recognize that a series of twenty cases is far too limited in number from which to draw a really scientific conclusion, and we shall accordingly follow this test in a larger number of cases with the belief that eventually numbers will prove it to be of unquestioned value as a diagnostic and prognostic procedure.

Discussion

Dr. C. M. Strong, Charlotte:

This is the first time I have heard that paper; I knew my partner was up to some devilment, but I didn't know that he was plotting (laughter). While I am not a practicing obstetrician, I have seen a good many cases that you could not class as toxemic kidney cases, and haven't been able to place the cause. The liver was suspected, but just how and in what way it caused the trouble we did not know. Of course, we do not know yet just exactly how to treat them, but from the deductions of this paper it would seem that there is a toxemia of pregnancy caused from the liver or some metabolic process in which this test may prove of great value, and I do not see why it couldn't be carried out in other obscure liver diseases outside of pregnancy. The paper shows originality. The technique described by the doctor is easily done and could be worked out very nicely.

Dr. L. A. Crowell, Lincolnton:

I came in late and only heard the end of Dr. Moore's paper and did not understand exactly what he was driving at. My impression is that women normally pregnant have a high leukocyte count; at least in our blood counts we always find that they have a high leukocyte count. Just where that becomes abnormal is a question that I would be unable to decide, and I would like to know whether there is anything in the doctor's paper that brought that point out, just when the leukoycte count would be considered abnormal and just what relation the clinical symptoms bore to leucocytosis. I may be all off the track, because I did not hear the paper and it is new to me.

Dr. Ivan Proctor, Raleigh, Chairman:

I want to have a word to say because I think that Dr. Moore is to be congratulated on his paper and on this new work. To my mind there is nothing in obstetrics more important than toxemia. It is the whole thing in pregnancy. It is not given one-half the consideration by most men doing obstetrics that it should have. It is a dangerous thing all the way through, in early and late pregnancy, and any method or form of diagnosis whereby we can determine the causes and classify the patients in order to take them out of the ordinary run of cases is a good thing for obstetrics, for women and for the profession.

I am very glad to hear Dr. Moore's paper and I am going to follow up the work during the year. I hope that he will continue to do so and that he will give us another paper next year.

Dr. R. A. White, Asheville:

This paper has been of particular interest to me. I know nothing of the work that Dr. Moore has been carrying on, and have seen nothing of it, but it looks mighty good to me. As the doctor has said, toxemia is a thing that we are afraid of and know very little about. We find that where urine tests have been negative and blood pressure tests have been negative—that is what I have been particularly interested in—we find low blood pressure, and later they will turn up with high blood pressure, toxemia and nausea. They are more likely to get toxemia later if they pass the initial period of nausea. It has been particularly interesting to me, because we have just organized in Asheville a prenatal clinic and have a number of patients coming in. The technic is simple, and I see no reason why we should not carry this out, see how it works, and have further reports.

Dr. Proctor, Chairman:

I think one thing that will be interesting will be to see how this change in leucocytes corresponds with the change in the blood pressure. Blood pressure, to my mind, is the most important thing in late toxemia, it is about the only definite sign that we have.

Urinalysis cannot compare with it because you know there are a certain per cent of eclamptics that will not show albumin. But a rise in blood pressure always precedes the toxic condition, and it will be interesting to know how the rise in the blood pressure compares with the leucocytes.

Dr. Moore, closing the discussion:

I appreciate the discussion. I am disappointed, though, that I did not get any laboratory discussion on it.

I want to make this explanatory remark about the test. This is not a paper read just to the State Medical Society, and I had no idea of reading this particular paper here. I had an entirely different idea in view if allowed to read a paper, until some weeks ago.

We did the work to find if there was any way of testing the liver function in pregnant women. There has been none that is worth the name, in pregnancy or other condition, one that could be carried out with a degree of accuracy or could be done by the average man. There is Snyder's test of the liver function dependent on dyes injected into the veins and recovered from the blood an hour and twenty minutes or two hours later. That is a test for liver insufficiency, not in pregnant women—no one has done that work—but liver insufficiency in general practice. That is a complicated test, one that is accurate, but it means constant application when being done by a very competent laboratory worker. Further, every other liver test that I know anything about carried some such drawback as that. I am attempting to say in this paper that we have a test for liver insufficiency and that it protects women from toxemia, the whole of it, all toxemias. I am laying myself open to a broadside and I am willing to take it, but we say that all toxemias of pregnancy are due to liver insufficiency. I class in that the vomiting in pregnancy, kidney break-down, eclampsias and near eclampsias, headache cases with kidney failure and spotted skin, etc.

Take J. R. Norris' classification, the general accepted one. He classified the liver type of toxemia, gastro-intestinal, kidney, liver and endocrine. I class all, for the purpose of argument, as liver insufficiency.

Take liver insufficiency in practice, apply any test, Snyder's, Widal's or anything else, it will take a number of years before you can prove the patient has it. He may live out a lifetime with it and you never find it out, or he may die of liver insufficiency clinically decided years later; those cannot be clinically proven for a long time. In pregnancy you can take Widal's test and apply at any stage and only seven or eight months later will find, if toxic, the case will be ended. It is subject to proof, and in these twenty cases we found that they did or did not turn up later with eclampsias, vomiting or toxemias. I selected these outstanding cases to keep from burdening you with a tremendous number of figures.

Dr. Barret does the laboratory work and he has taken women in the laboratory and tested them and did not see them. He got the

report, tested in the various hospitals in town, would call me on the phone and classify by his report as I did on my clinical findings. He was roughly paralleling me all the way through. That is what has made me feel so much certainty in it, because the laboratory man would find the blood test to correspond with my clinical findings.

If there is anything in the test, what does it amount to in a practical way? Anyone who can use the microscope can do it. This test can be applied to pregnant women and if they react positively, by descending curve after a protein meal, the certainty that this is a potential toxic case leads the doctor to handle them along definite lines. If it is protein overload, you cut out the protein intake. It is not a hazy instruction that you must not eat so and so. on a sort of indefinite line, but a direct statement, you must do so and so if you will escape evil results. There will be about twenty-five to every one woman who will be allowed to do just as they please as to food intake, because the test has proven that they are not positive and you do not bother along dietary lines just to save the others. Two women, wives of farmers, pregnant at the same time, eat hog meat during hog killing season, and one wakes up with convulsions and the other goes straight through without any symptoms. Nobody knows why that happens, but if this is correct it proves why. One is not able to handle it while the other is. If you tested by this procedure, granted that it is the correct procedure, you would be definitely able to say to Mrs. A, "You can not eat this," and to Mrs. B, "You can eat anything you wish," and we shall save one from inconvenience and the other from the dangers of toxemia; we shall keep one well by restricted diet and the other by unrestricted. Besides the fact that you know as much as you can know about your case, as every man wants to, it gives you a definite handle to take hold of in instructions to women and a far and away better outlook on what will happen in any case. If you do no more than predict toxemia before they show any symptoms, that we now use as warning symptoms, you will know long before what will happen.

As to Dr. Crowell's remarks, I will say that it is leucocytosis after giving a standard protein meal, what happens two hours afterwards is why we are interested; there is a high leucocyte curve. After delivery women always have a higher count than normal. Aside from that average the higher white count has no significance.

I put the paper up to be shot at. I am very enthusiastic over it, as you noted. I want as much taken out as can be, so that I shall not believe in it too strongly before it is carried out. Most women are pregnant two or three months when first seen and you have to wait only six or seven months to find out if you are wrong or right.

It is not an indefinite thing that must be studied for years afterwards to know if you have liver insufficiency or not.

I am very much obliged, gentlemen, for the discussion.

THE CAUSES AND MECHANISM OF MENSTRUATION, WITH THE MOST FREQUENT DISORDERS OF THE SAME

J. Ernest Stokes, M. D., Salisbury

The Causes and Mechanism of Menstruation

The process of menstruation has aroused the interest of scientific investigators from the earliest times. At first, students of the phenomenon, including Aristotle, Paracelsus, de Graaf and others, paid almost exclusive attention to the hemorrhage, which, as they argued, was caused by a local or general plethora as a result of fermentation of the blood. Later writers, for instance, Burdach and Johannes Müller, considered the process in the light of a substitute for conception, while Nägele thought that it represented a periodic renewal of the depleted powers of conception. Pflüger wrought a complete change in view regarding the function. He pictured it as resulting from an irritation of the nerve-centers by the progressive growth of the cells of the swollen ovary. When the sum of these irritations reached a definite limit, by a reflex through the spinal cord, congestion of the genitals and constriction of the peripheral vessels were produced. The congestion caused the menstrual changes of the uterus, the ripening of the larger follicles, desquamation of the uterine mucosa, and ovulation. This view, with certain modifications regarding the source of irritation, has been widely accepted down to fairly recent times.

For a clear conception of the accepted theories of today regarding the cause and mechanism of menstruation, it is necessary to review in detail the factors which determine ovulation and menstruation. There is no doubt that menstruation depends on the functional activity of the ovary, for its onset coincides with the first production of a ripe ovum in the ovary, and ceases with the menopause or climacteric.

If the ovaries are removed before puberty the menstrual function does not set in, and if they are removed during adult life premature menopause usually results. It is practically certain that ovulation occurs at periods corresponding to menstruation, though there is much division of opinion regarding the exact relation between the two processes—the difference being mainly on the point whether ovulation precedes and initiates menstruation, or whether ovulation occurs during or after the menstrual period. The latter of these views is held in less favor than the former, and for this reason it is probably preferable to sum up the arguments in its favor.

In most mammals impregnation and conception are possible only at certain periods of the year (during rut or heat, technically termed estrus), when the mucous membrane of the external genitals become swollen, there is often a discharge of blood or mucus from the vagina, and uterus undergoes marked histologic changes, divisible into four periods:

(1) The period of rest, the uterine mucous membrane being pale and thin.

(2) The period of growth or congestion, corresponding to the premenstrual thickening of mucosa in the human.

(3) The period of destruction with hemorrhage into the mucous membrane, desquamation of the superficial epithelial cells, and occasionally discharge of blood and mucus from the vagina.

(4) The period of recuperation, corresponding to the post-menstrual regeneration of the mucous membrane.

During the first part of the fourth period or at its very end—that is, during the period corresponding to the regeneration stage in the human—ovulation occurs in animals. If fertilization occurs the mucous membrane rapidly hypertrophies, but in absence of fertilization it reassumes the characteristics of the mucosa during the period of rest.

Heape and Marshall found this in a larger number of different mammals, and they felt justified in concluding that the second and third periods represent the physiological homologue of menstruation, and that ovulation or the maturation of the ovum occurs after or at the very end of the menstrual flow in the human being.

The protagonists of this view naturally hold that the object of menstruation is to render the condition of the uterus, at the end of the menstrual flow, suitable for the reception and development of the ovum, if fertilization takes place.

There is fairly definite evidence, however, that ovulation precedes menstruation, and it is quite wisely accepted that certain factors in the first process initiate the onset of menstruation. On this theory the degeneration of the mucous membrane of the uterus, in Straling's words, "represents the undoing of a preparation for the reception of a fertilized ovum."

The function of ovulation sets in with the onset of puberty by the development of one or more of the Graafian follicles (which development is considered the causative factor of the phenomena characteristic of puberty in the female, such as the rapid growth, the skeletal changes with development of the feminine type of pelvis, the hypertrophy of the mammary glands, the growth of hair in the pubic region and the mental characteristics typical of the sex).

At first there is a proliferation of the epithelium of the Graafian follicle, the cells becoming cubical and being arranged in several layers around the ovum. At one point there is a cavity containing a fluid, the liquor folliculi, and by an augmentation of the fluid contents the follicle increases in size and undergoes several changes, approaching the surface of the ovary, from which, when mature, it projects as a transparent vesicle about the size of a pea (6-15 millimeters).

Its membrane becomes thinner with growth and when maturation is complete it ruptures, discharging the ovum and liquid contents of the Graafian follicle. By a mechanism not fully understood the ovum is received by the fimbriated extermity of the Fallopian tube and enters its cavity, being then propelled through the tube by peristaltic contraction of its muscle fibers and by the action of the cilia of its lining epithelium. It has been estimated that it takes from four to ten days for the transfer of the ovum from the ovary to the uterus.

With the rupture of the Graafian follicle and the extrusion of the ovum there is an effusion of blood into the cavity of the follicle; this soon coagulates, loses its color and assumes the characteristics of fibrin. The follicular walls become thickened from a deposition of a glutinous substance, yellowish-red in color, and undergo still further hypertrophy until they almost obliterate the follicular cavity. Gradually the mass loses its color and becomes decidedly yellow, when it is known as the corpus lutem (yellow body). If the extruded ovum has not been impregnated by spermatozoa—or rather if the unfertilized ovum dies, regressive changes set in within the corpus luteum and this body gradually disappears until it is represented only by small scar on the surface of the ovary.

Now, it is argued that there are certain hormones within the ovum which protect the corpus luteum during the course of its development. With the death of the ovum its hormones disappear and the corpus luteum regresses and disappears. The growth of the uterus and the hypertrophy of its mucosa are dependent on the ripening follicle and on the corpus luteum. Extensive studies on the corpus luteum have shown that a fresh functionating corpus luteum is present only during the premenstrual period, and that with regression the corpus luteum loses its functional stimulus over the uterus, leading to the undoing of the preparation of the uterine mucosa for pregnancy—in other words, it results in menstruation.

Norris in his classic work on the menopause adds that menstruation is nothing more than a preparation of the uterus for pregnancy, and that menstruation might well be described as an abortion of an unfertilized ovum. The ambiguous, but tersely expressed, view of Powers, that "women menstruate because they do not conceive," can be readily understood. Bandler likens menstruation to a miniature labor, and labor to a magnified menstruation.

In the final analysis, the activity of the ovum on the genital system is the key to the solution of the question of the normal physiology of the menstrual cycle. This is borne out by the fact that if the ovum is impregnated, the corpus luteum continues to grow, reaching its greatest development the third month of pregnancy, and is present during the entire period of gestation.

The menstrual cycle, so far as the changes in the uterus are concerned, is commonly divided into four periods:

(1) The period of rest.

(2) The premenstrual swelling of the endometrium.

(3) The desquamation and hemorrhage.

(4) Postmenstrual regeneration of the mucosa.

The premenstrual hypertrophy of the mucosa is caused by a rapid proliferation of the stroma, an increase in the size of the tubular glands, an augmentation of the secretion of the epithelial cells, and hyperemia of the vessels. If impregnation has not occurred the mucosa then degenerates cell for cell through autolysis, aided by a tryptic ferment and the phagocytic activity of the leucocytes, which appear in great numbers, and desquamation of the superficial epithelium results, with discharge of blood and secretions from the uterine glands into the vagina. Desquamation is almost always complete. After menstruation the mucous membrane diminishes in thickness, its vascularity is decreased, and the superficial epithelium is rapidly regenerated.

So far as the time intervals are concerned, it is claimed that with regular menstrual periods every twenty-eight days, ovulation occurs from the fourteenth to the sixteenth day. It has been estimated that it takes as long as ten days for the ovum to reach the uterus, so that the death of the ovum within the next several days would lead to menstruation. To illustrate clearly the influence of the ripening Graafian follicle and corpus luteum on the menstrual cycle, Schröder has divided the cycle into three periods, and has correlated the uterine changes with the ovarian process. He distinguishes three periods:

(1) Desquamation and regeneration of superficial epithelium.

(2) Proliferation of uterine mucosa.

(3) Period of secretion (including the premenstrual hypertrophy of the old nomenclature).

The first period embraces five days, the regeneration of the superficial epithelium proceeding very rapidly. From the sixth to the sixteenth day proliferation of the endometrium is proceeding, under stimulus of the ripening Graafian follicle, which discharges its ovum on the sixteenth day. With the discharge of the ovum the corpus luteum begins to develop, which initiates the secretory phase in the endomentrium, the increased secretion leading to the premenstrual thickening observed by former investigators. This period extends from the seventeenth to the twenty-eighth day, when the ovum dies, the corpus luteum begins to regress, and desquamation of the uterine mucosa again takes place—the first stage in the next menstrual cycle.

THE MOST FREQUENT DISORDERS OF MENSTRUATION

It is now fairly well recognized that the menstrual cycle itself and its periodic recurrence depend on the maturation of the ovum,

but the severity of the hemorrhages and any possible disorders do not necessarily bear an immediate relation to the ovary. In this connection, it should be emphasized that two distinct activities are engendered in the ovary, namely:

(1) Stimulation to hyperplasia of the mucous membrane of the uterus, tubes and vagina, and maintenance of endometrial congestion; and

(2) The maturation of the ovum.

Both activities run parallel, but not unconditionally so. Thus the menstrual cycle may not be disturbed even though the uterine mucous membrane be atrophic (e. g., in acute anteflexion or retrodisplacement); and, on the other hand, marked congestion of the genital canal may be observed in cases of absolute amenorrhea.

AMENORRHEA

Diseases of the genital tract do not invariably have an immediate effect upon the regularity of the menstrual cycle. Despite the presence of uterine myoma, adenocystic hyperplasia, cervical carcinoma, or even severe infiltrative endometritis; the clinical character of the menstrual cycle may be absolutely unaltered. Depgen recently summarized (in a Rostock University thesis, 1920) 47 cases of tuberculosis of the adnexa, in 34 of which menstruation recurred at regular periods, although tuberculous foci of the uterus were found in 19 cases, 6 with severe injury of the endometrium. On the other hand, constitutional factors or even insignificant influences often interrupt and abolish the menstrual cycle. In fact, almost any general disorder, especially a disease of serious nature and chronic course, is likely to serve as a predisposing cause of amenorrhea. Usually, however, these diseases bear some relation to general nutrition, blood formation, or normal activity of the nervous system.

The most common particular diseases in which amenorrhea is observed are chlorosis and tuberculosis. In the latter disease the absence of menstruation is often the earliest symptom. Profuse loss of blood in the premenstrual stage (as from hemoptysis, from gastric and duodenal ulcer, or from a surgical operation), exhaustion, sudden fright, anxiety, a psychosis (especially of melancholic type), or a neurosis (as epilepsy or chorea major) may suppress the menstrual function, as may also myxedema, exophthalmic goiter. Addison's disease, obesity, diabetes, carcinoma with cachexia, syphilis, and acute fevers and poisoning. Even change of climate may act as a direct cause of amenorrhea.

In young immigrants and in girls moving from the country to a city, menstruation may be suppressed for from six months to a year without any symptom of anemia or chlorosis. During the war there was a marked increase in the number of cases of amenorrhea in the Central Empires and Scandinavia, so much so that the med-

ical authors of these countries (Fischer, Stickel, Graefe, Nilsson) referred to them as "War amenorrhea." These were variously attributed to psychic shock (anxiety, worry, etc., etc.), undernutrition, overwork, and to ergot in the war bread. The condition occurred in virgins and widows, as well as married women; in fact, if anything, it was more common in virgins and widows.

The weight of opinion favors the view that the condition was due to undernutrition, possibly to the shortage of proteins (meat, eggs, cheese, milk, and even beans and peas were scarce). Even in this, as in chlorosis, tuberculosis, and other grave general derangements, the amenorrhea is in a sense physiologic, an effort of nature to protect the organism by inhibiting activities which entail a loss of tissue proteins, among these ovulation and menstruation, conception and pregnancy.

While most cases of amenorrhea during the normal procreative period of woman's life are probably not of a genital origin those cases which are due to failure of ovarian function and to uterine causes must be clearly differentiated. The best guide to absence or failure of ovarian action is the absence of the menstrual molimen, that ensemble of vague symptoms attendant upon the flow, namely the sense of weight and pain in the pelvis, backache, tenderness or pain and swelling of the breasts, nervous irritability, and various reflex disturbances. Diagnosis of uterine causes will necessarily depend on the results of a physical examination.

DYSMENORRHEA

Painful menstruation, commonly termed "dysmenorrhea," may be due to local diseases of the genital organs, such as endometritis, myoma, and diseases of the tubes, in which diseases it is often the only or most prominent symptom. It is evident that all organs in the true pelvis are more or less affected by menstruation, but under normal conditions the menstrual period should be devoid of pain, other than the ordinary discomfort and sensations of the molimen.

Certain nervous disorders, especially such as are characterized by symptoms of the nervous system, give rise to separate forms of dysmenorrhea where no structual anomaly is discoverable. Etiologically, most gynecologic writers therefore classify dysmenorrhea as that due to local causes and that of nervous origin. The first group may be more particularly subdivided into ovarian, tubal, and uterine dysmenorrhea, depending upon the location of the special lesion that serves to make menstruation painful or difficult. Ovarian dysmenorrhea is admittedly quite rare, but a chronic oöphoritis may give rise to a mild form of dysmenorrhea characterized by a gnawing, stabbing, or boring pain, dragging sensation or pressure in the ovarian region. Sometimes this is merely an exaggeration of the pain that is constantly present. An ovarian hematoma or a tumor with a twisted pedicle may be responsible for acute pains early in the menstrual period.

Tubal dysmenorrhea is more common than ovarian dysmenorrhea, and is almost always the result of chronic salpingitis, marked by stabbing or burning pains and a dragging sensation in the side.

The great majority of cases of severe dysmenorrhea ascribable to local genital causes are undoubtedly of uterine origin. Structural changes or defects are often found to explain the pains accompanying each menstrual period. Greatest stress is usually laid upon stenosis of the internal os. Whereas no sphincter mechanism has ever been demonstrated in this area, the isthmus represents the narrowest part of the cavity of the uterus and has, at the same time, the thinnest mucosal coat. If the uterus is not completely developed, as is quite common in young girls, there will be a relatively long cervical canal with a very small lumen and a narrow corpus uteri with weak musculature. It is readily conceivable that, in such a uterus, reflex contractions aimed at expulsion of the menstrual flow will be accompanied by severe pain. While stenosis of the os is never so complete as to prevent escape of some blood, even a normal flow will prove relatively profuse for comfortable escape through the narrow opening. There may also be small clots or minute tissue particles too large to pass the internal os of nulliparas.

Painful menstruation also occurs from accumulation of blood in the uterus in connection with endometritis and metritis, or a submucous myoma, marked hypoplasia, acute anteflexion or retroflexion may give rise to the painful manifestations. Anteflexion may cause an acute angulation at the internal os, thus producing a mechanical obstruction identical with stenosis. Marked hypoplasia, or incomplete development of the uterus, may cause dysmenorrhea that is accompanied by only a "trickling" of menstrual fluid. This form often disappears after marriage or pregnancy. Severe reflex painful contractions may be produced by the action of the menstrual blood on endometritis, and menorrhagia may be associated with this type of dysmenorrhea. In fact, the menstrual flow is rarely diminished in such cases, which are usually characterized by pain eight or ten days before menstruation, as a result of the premenstrual congestion. The pains ordinarily continue through the period. On the other hand, in the dysmenorrhea that is due to stenosis of the os or to structual anomalies, the pains set in only a few hours, never several days, before the menstrual flow. The pains in uterine dysmenorrhea are usually sufficiently definite to locate the seat of the trouble, being quite analogous to labor pains.

‡Winter affirms that any dysmenorrhea beginning after marriage may be considered inflammatory (though endometritis may also be found in virgins), and that unless the dysmenorrhea has occurred early in the menstrual history of the patient, it is likely to be due to other causes than a congenital anomaly. Some types of uterine dysmenorrhea may be caused by hyperesthesia of the endometrium without any demonstrable structure change. These Theil-

‡(G. Winter and C. Ruge: Textbook of Gynenecological Diagnosis; Philadelphia, J. B. Lippincott Co.)

haber attributes to spasm of the internal os (quoted from Winter) which makes them in a sense akin to the mechanical dysmenorrhea due to stenosis of the os.

Nervous dysmenorrhea is really a uterine form because its manifestations are localized there, although produced by aberrant nervous stimuli from other centers. The contractions are excited over reflex paths by irritability of the nervous system which finds expression through the uterine nerves. Women of the so called "nervous" type, mostly neurasthenic and hysterical women with bad nutrition, anemia or general frailty, are the usual sufferers from this form of dysmenorrhea. Overwork, either from physical labor or mental strain, and an unhappy childless marriage may be contributing factors.

A rare form of dysmenorrhea has been described by Schiff and Fliess under the designation of "nasal dysemenorrhea." In this form, painful uterine contractions are elicited by irritation of definite areas of the nasal mucous membrane; as the anterior extremity of the inferior turbinate or the tuberculum septi. It is argued that since cocainization or cauterization of these areas cure such cases, a definite etiologic relation is established.

ABNORMAL MENSTRUAL HEMORRHAGES

The remaining disorders of menstruation can be grouped most conveniently under the heading of abnormal menstrual hemorrages. This will take account of disorders in the volume and duration of the flow, and disturbance of the periodicity of the menstrual cycle. Disorders in the volume and duration of the flow may result in either hypermenorrhea (hemorrhage in excessive volume or of abnormally prolonged duration) or hypomenorrhea (hemorrhage in deficient volume or of abnormally short duration). Menorrhagias are of functional origin, and their cause is conditioned upon the contractility of the uterine muscle which controls the hemorrhage from the vessels that have been ruptured during the complete desquamation entailed by menstruation. If the uterine musculature is underdeveloped or infantile, a type of local asthenia (what Mansfeldt calls metrasthenia) will be encountered, and this will tend to prolong unduly the menstrual period. The amount of blood in the congested uterine mucosa undoubtedly plays an important role in the volume and duration of the hemorrhage. Pelvic hyperemia has a direct effect upon the volume of the monthly flow. Chronic stasis has been claimed to be present in so called "metritis" of married women, attributed by *Salus to the practice of coitus interruptus. Hypersecretion of the ovaries may in itself lead to considerable hyperemia or hypertrophy of the uterine musculature, and thus serve as an indirect cause of hypermenorrhea. Hyperemia or stasis may also be caused by disturbances of the pelvic circulation, as from displacement of the uterus. This is more commonly found

*(Salus: Centralblatt für Gynackologie, 1919, No. 19).

with retroflexion than with retroversion. Endometritis frequently follows from gonorrheal infection, either acute or chronic, and may lead to menorrhagia.

Menorrhagia is quite a common accompainment of impending menopause.

Menorrhagia may be typified by so called vicarious menstruation, with a flow of blood from the mouth, nose, stomach, or anus or with extravasation under the skin, where it leads to the formation of petechiae. It is supposed that these hemorrhages from peripheral vessels with lowered resistance tend to relieve the uterine congestion.

Disturbances in the periodic recurrence of the menstrual cycle may be characterized by short intervals between the onset of the individual periods (that is, by polymenorrhea or too frequent menstruation), and by prolonged intervals between the periods (ollgomenorrhea or infrequent menstruation). These are probably based on the periodicety and duration of ovum maturation. It is possible that the ovum matures within a normal period but dies rapidly and thereby eventuates in early degeneration of its corpus luteum. Thus the inhibition to the maturation of another follicle is withdrawn and early ovulation leads to another menstrual period within a short time. In fact, the inhibition on the follicles may be very low, permitting one ovum after another to mature and degenerate (cystic degeneration). From this it follows that polymenorrhea is really an insufficiency and not ovarian hyperfunction. In oligomenorrhea, on the other hand, the ovum probably matures more slowly or after a considerable pause, and the mature ovum is also weak and soon dies. From this, too, oligomenorrhea would be classified as a definite insufficiency.

In the view of some authors, there is not much qualitative difference between these disturbances and amenorrhea. The only difference is a quantitative factor. The mildest type of insufficency gives rise to polymenorrhea, the moderate type of oligomenorrhea, and a severe type to amenorrhea. The connection between ovarian insufficincy and polymenorrhea is borne out by the short intervals between the homorrhages of puberty, when there is still relative ovarian infantilism. During the influenza pandemic many cases of early and profuse menstruation were recorded. These were probably due to premature death of a mature ovum, as is often observed at the onset of almost any acute fever, and were frequently followed by polymenorrhea or oligomenorrhea.

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DISCUSSION.

F. Webb Griffith, Asheville:

Dr. Stokes has so well covered the subject that there is very little to say except to emphasize a few points. Every case of uterine bleeding which persists for a week or more should have a thorough local examination. The majority of cases of uterine bleeding are due to trouble in the pelvis. Uterine bleeding can come from other conditions outside of the pelvis, but I would say that possibly ninety per cent are due to pelvic causes.

The cases of amenorrhea can be divided into the pregnant and nonpregnant. In the nonpregnant group from ninety to one hundred per cent are from causes outside of the pelvis and it makes no difference whether the pelvic examination is made or not.

To recapitulate, in every case of uterine bleeding which is persistent, pelvic examination should be made, while on the other hand it is seldom necessary to make a pelvic examination on any case of amenorrhea. Usually emmenagogues are worthless, as they do not bring on the menstrual flow. Iron, arsenic, freedom from worry, sufficient rest, good food and fresh air, or in other words the things that build up the general health, are the only true emmenagogues. How much good would it do to pour medicines into a girl who works long hours, under unhygienic conditions and with poor food? Or how much good would the so-called emmenagogues do toward correcting the amenorrhea of an active tuberculosis?

To most physicians a diagnosis of dysmenorrhea calls for dilatation. Occasionally thorough dilatation will help when the dysmenorrhea has persisted since the time of puberty, but even in those cases I do not believe that the cure from dilatation will be over ten per cent. In many cases the pathology will be found in the pelvis, while other cases of dysmenorrhea are apparently of a neuralgic character, and resistant to all forms of treatment except perhaps pregnancy.

This presentation by Dr. Stokes is one of the best that I have heard on this subject for a long time.

Dr. C. M. Strong, Charlotte:

I would like to say a word or two. Dr. Stokes has covered well this field of gynecology, and I wish to call attention to uterine dysfunction or a type of dysmenorrhea that we find so common, and I think that we can explain it in that the uterus is composed of two-thirds muscular tissue and one-third fibrous tissue, and for normal menstruation you

must have normal muscular development. The causes we have found have been infection of some kind which destroys the muscular tissue, which is superseded by fibrous tissue; this renders menstruation painful. One of the most prolific causes we have found to be deep curettement. We know that endometrium plays a part in menstruation; it stimulates the other generative organs, and if you destroy the tubular glands, you destroy that cycle which helps to cause menstruation; so we find these women have pelvic infection, not so much from gonorrhea, but from pus and colon infections, and the only cure is hysterectomy, as dilation and curettement will not help. We must take out that fibrous uterus which causes the trouble. I would like to call attention to the fact that indiscriminate curettement is ill advised, except in the presence of overt diseases of the endometrium; and that curettement is not only ill advised, but is a vicious practice, as it opens up deeper avenues for infection which brings about this fibrous change, whereas the gonococcus produces more or less a superficial one and is not usually followed by these changes.

Dr. Stokes, closing the discussion:

As far as the mechanism of menstruation is concerned, the points of the paper have long been understood, and there was no attempt to advance them as any new ideas. My desire was to show the relationship between the causes of menstruation and the disorders of the same.

As regards the disorders of menstruation, I think the mechanical features do not admit of any discussion. Where there is a displacement, and in many instances even an inflammatory process, it should be looked upon as mechanical.

The idea was to emphasize the disorders of menstruation influenced by the maturation of the ovum, the functional stimulus of the corpus luteum over the uterus, and that the growth of the uterus and the hypertrophy of its musosa are dependent on the ripening of the follicle and corpus luteum. The ovary pours out the internal secretion which through its hormone protects the corpus luteum, which influences the development and growth of the uterus.

OBSERVATIONS AT THE CHICAGO LYING-IN HOSPITAL

George Johnson, M.D., Wilmington

This paper is a departure from the usual in that I have taken the liberty of talking on several subjects, instead of confining myself to one. I thought that the majority of you had rather hear of the work of one of our large maternities than a more detailed account of one condition.

One of the hardest problems in practicing obstetrics in the home is to maintain an aseptic field. In fact, it is so hard that most practitioners go at it in a half-hearted way. To overcome this a standardized technic will have to be developed.

The routine technic at the Chicago Lying-in Hospital is as follows: An enema is given, provided you are called early enough. Table leaves

or an ironing board are placed under the mattress to keep it from sagging and an oil cloth (from the kitchen table, if no other) is put over the sheet covering the mattress. Two rows of safety pins are put in the farther and lower ends, and between these rows of pins two rolls of newspapers are placed. This makes a serviceable home Kelly pad. Clean newspapers are placed over this, folded so that they may be removed as they become soiled.

The patient is prepared by placing in the introitus a pledget soaked in 1 to 1,500 bichloride solution and by shaving, using green soap as the softening agent. Then, with cotton pledgets soaked and squeezed from first a ½% lysol, second a 1 to 1,500 bichloride solution, the patient is scrubbed. You first go transversely from the symphsis to the umbilicus, next from the groins transversely to the knees, and back down across the rectum, then down the labia majoria across the rectum, next down the labia minora across the rectum, taking care to get the smegma from around the clitoris. Lastly you go straight down across the introitus and rectum, a fresh cotton pledget being used for each step. This is repeated just before delivery.

At the last scrub two pairs of gloves are used, one on top of the other, so that, at the time of delivery the top pair can be slipped off and you have a sterile pair of gloves for the delivery.

This will require more time and work than most practitioners give their patients, but you will be repaid for the effort by a decrease in the number of febrile convalescences. At Chicago, where this technic is practiced, they have delivered 20,000 cases in the home with only five deaths from puerpural sepsis, regardless of the very unfavorable surroundings of the slums.

The after care is easily solved there by incorporating it as a part of the nurse's training. This will be one of our biggest problems. What I think is the best solution is to train a conscientious practical nurse in the correct way of taking care of these cases. Have her present at the time of delivery, and then go back each day, spending about an hour a day at each house cleaning and dressing the mother and babe, and teaching them how it should be done. This is much better than having the mother, a midwife or some friend to look after them. They are willing, but too often ignorant. What good will it do a doctor to have an aseptic delivery and then to have the patient infected afterwards?

During a normal labor little is done except carefully watching the condition of the mother and the fetal heart rate. If the patient shows signs of fatigue and if she does not have too much dilatation (roughly, 5 cm. in a multipara and 8 cm. in a primipara), morphia (gr. ¼) and scopolamin (gr. 1-200) are given. They use the scopolamin put up in ampules by Hoffman-LaRoche, of New York. The scopolamin is repeated in two hours if indicated. This is termed the modified form of twilight sleep. It usually induces a quiet sleep, the cervix dilates 1 to 2 cm., and there is more effacement and engagement. Twilight sleep in the strict sense is not used, as they think it too dangerous.

One point to which they pay a great deal of attention, and to which the general practitioner does not give enough, is the careful watching of the fetal heart rate. With the ordinary stethoscope this is not very practical, but it is rendered very simple by the use of the head stethoscope. The advantages are that you can hear better, it is more convenient, and you can use it without contaminating your hands. A great many things of importance can be obtained from its use. You can rest more assured that the baby in utero is doing all right, and there are several conditions detrimental to the baby that can be recognized by its use, as asphyxia and partial prolapse of the cord.

Rectal examinations are used almost exclusively. This is a point that should be stressed. If the doctors would use this method instead of vaginal examinations there would be a great decrease in the number of febrile convalescences. The advantages are easily seen, greater security against infection and less embarrassment to the patient. Though some of the patients will tell you that you have made a mistake, after reassuring them they much prefer this to the other method. The disadvantages are that most men can tell nothing by a rectal examination, also you may get confused by a fold of rectal mucosa, or you may get a thinned out cervical lip. The fontanels and sutures are not quite as plainly made out. After a certain amount of experience, you can in ninety-nine per cent of the cases accurately estimate the amount of dilatation, effacement and engagement. In learning to do rectals, after inserting the finger let it rest idle for a few moments to get accustomed to its new surroundings, then gently sweep from one side to the other, then antero-posterior, each time making more pressure upward. In the beginning of labor, before there is much dilatation, you will often find the cervix way back up against the sacrum.

As for operative measures, episiotomy is done rather often, the mediolateral incision being used, cutting down as deep as required, very often down to and through the levator and its sheath. They repair by bringing all the cut surface into direct apposition. The first suture is in the vaginal mucosa, the vagina having previously been well packed with gauze, so that you have a clean field. A continuous suture of catgut is used, starting at the end of the cut and coming to the surface, care being taken to bring the two edges of the hymen together; continuing about 2 cm. further and getting the cunni constrictor of the vagina. The cut skin surface is repaired by using continuous catgut or figure of eight silkworm-gut, the initial stitch beginning at the deepest part of the cut, which is usually at the levator muscle. In using the figure of eight silk care must be taken not to draw it too tight. All repairs are done with one finger in the rectum, to avoid sewing into it, an extra glove being slipped over the rectal hand. A patient with a properly repaired episiotomy has a primiparous perineum, so another episiotomy will probably have to be done at the next delivery. This is a very important subject, for if the women were properly repaired at the time of delivery there would be a great deal less discomfort in after years, and a marked reduction of gynecological operations.

Forceps are used rather frequently, that is the low variety or so-called prophylactic forceps. The high forceps are practically never

used. The fetal ear is used as a criterion in diagnosing position. An episiotomy is done in most of these cases. The head is delivered by easy traction, keeping track of the fetal heart all the while. The forceps are removed just before the head is delivered.

Occipitoposterior presentations are treated with watchful expectancy. As you know, ninety-five per cent will rotate spontaneously before the second stage. Morphin and scopolamin are given as indicated. In case of persistent occipitoposterior presentation a manual rotation is done and the patient allowed to deliver spontaneously, or forceps are applied, one hand keeping the head in position until the forceps are on.

Potter's version on the whole is condemned. Dr. De Lee said that he was sure it had caused a great number of fetal deaths.

The low cervical cesarean is the section of preference, especially when there is some doubt as to the asepsis.

Bags are used fairly frequently, especially for induction of labor after castor oil and quinine have failed, and in the cases of rigid cervix.

In case of severe hemorrhage the blood is saved, mixed with saline solution, strained, and given as a proctoclysis.

Watchful expectancy is stressed. On the wall of every delivery room are two signs in bronze: *"Primum nil nocete,"* and *"Non vi sed arte,"* meaning, "First to do no harm" and "not force but art." They are advocating conservative obstetrics, and this, I believe, in the end will give the best results.

DISCUSSION

Dr. H. M. S. Cason, Edenton:

I would like to ask Dr. Johnson if he has any preference as to which side he does the cutting in episiotomy, and ask his reasons for using that particular side, right or left.

The Chairman: Dr. Oren Moore has just returned from seeing Potter, and we would like to hear from him.

Dr. Oren Moore, Charlotte:

I came away from seeing Potter thoroughly convinced that he was all right, and I had gone to see him thoroughly convinced that he was wrong. I think that De Lee held a leg for him while he was doing his version. I asked him if De Lee dropped dead, and he said no, but he fainted, which is probably what De Lee would do. (Laughter). I mean no disrespect to De Lee; I hold that he is the foremost obstetrical technician of today. The imprint of De Lee is on this paper and on the technique of the Lying-in Hospital; you can do no wrong in following him.

When I was in Buffalo with Potter, Dr. Garrison, of Birmingham, who had had De Lee for seventeen years, felt his conscience so wrought upon that he must needs see Potter, and he left Buffalo feeling that he was the real obstetrician of America. No one can see Potter and come

away with vicious ideas; no one can feel that he is voicing an improper method of procedure.

Now, I am not going to argue the question of Potter's fetal death-rate as against anybody else's. It would be impossible to compare figures on fetal or maternal deaths with any hope of proof. The conditions under which deliveries are done, the assistants that are used and the man that actually handles the deliveries must all go into consideration before you come to the comparative death-rate of one clinic over another. My own death-rate might be higher than that of practitioners in the country, and I claim without any undue boasting that I can beat them in doing obstetrics, but I have more complications and conditions are much worse. I use that merely as an illustration of the futility of trying to compare the statistics of one with another. There is no way in which you can arrive at it.

Polak took a nasty fall out of Potter at Philadelphia when he compared his own statistics in one column with Potter's in another and the average statistics in another column. It did not convince me, and I hadn't seen Potter. It was one man's opinion against Potter, and Polak had no idea how he did it except as reported to him.

Potter makes no claim that his version is the only way out of the occipitoposterior position, but he says that if you do a version you will not be troubled about what position it is.

The questions of technic that the doctor has brought out here are as sound as a dollar and deserve all the consideration that can be given.

I am in favor of De Lee's prophylactic forceps and according to De Lee's method I have used the prophylactic forcep, for I believe in it very thoroughly. I have saved unnecessary pain and saved myself a good deal of sleep. I have nothing but commendation for the De Lee method.

The outline that the Doctor has given of his preparations are all as clear as can be and all as thorough as can be, and the conclusions that he draws as to convalescence and freedom from infection will be just what a man will get if he uses this method.

The question of examination by rectum is one of which a man must be convinced. I was doing all vaginal examinations and I read a paper that the other was the right way to do it, and I sat back and laughed and said that the writer did not know what he was talking about. He said if you would do twenty-eight you would be convinced. I decided to try it and long before the twenty-eight were done I was convinced that it was true. If there is no other virtue, suppose a woman has been examined rectally, and she does show infection, or there is a rise in her temperature after labor, your conscience is clear; if you have not done anything to protect her at least you have done nothing to infect her and you have definitely something to say to the family or staff or assistant and to yourself—no matter what happens you did not do it. If for no other reason than the old one of taking an extra suture, an extra knot known

as the slip knot, knowing it will not give way, rectal examination gives you peace of mind.

The outline of preparation as set out in the paper is one that should be carried out, one that makes for your own happiness in delivery and for the comfort of the patient. I want to add my very hearty commendation to everything the doctor has said.

Dr. Ivan Proctor, Raleigh, Chairman:

I want to make one or two remarks about the Doctor's paper and congratulate him on his excellent presentation.

First, his preparation brings to my mind an article that I saw a few monthe ago in the American Journal of Obstetrics and Gynecology, which compared one hundred cases given the routine obstetric preparation used at Johns Hopkins Hospital, and another group of cases that had absolutely no preparation. The author gave statistics on the rise of temperature or any suggestion of infection in these two groups of cases. The result was a fraction lower percentage of fevers in cases not prepared than those that received detailed preparation. It was very interesting to me, but I am better satisfied after preparing my cases, at least with shaving, green soap and water, possibly lysol, than leaving them just as they are.

As for version, I have been very much interested in this subject and have been to see Potter. The first time I heard of his work I said that he was crazy, as most of the men do. I went to see his technic and on learning how simple it is I believe that it is the only technic to be employed. I believe that a man to do a version properly should do it as Potter does. It is the most simple and reliable. The only objection I have is as to Potter's application. His technic is the proper one, but I can not agree to using it in every case or in anywhere near every case. The thing I got out of my visit was to learn the technic and indications for version and to feel that if there is an indication that I can do the operation properly. Most men hesitate to do a version. I do not hesitate to do that any more than low forceps. If you know how it is not a great deal harder. If you have a contracted pelvis you may have trouble, but you will have trouble any way you may deliver. A man doing obstetrics should know how to do a perfect version and watch for the indications. Occipitoposterior position is one of the best indications for version. In a certain number of cases that you rotate with the hand or forceps when you go to apply your forceps in the anterior position the head slips back and there will be a bruising of the soft parts, more suffering and injury than if a version is properly done when the occiput persists in its posterior position.

As to the induction of labor, I do not agree with the idea that labor should be induced in all patients at maturity, but a man should watch the growth of the child very carefully. One child will grow to maturity in eight lunar months, another in ten, and that ought to be realized. You can only estimate maturity by ante partum fetometry. You must estimate the weight and measurements before and after birth and compare

results, using, as Reed says, the Ahlfeld, McDonald and Perret measurements.

I want the Doctor to bring out what cases he induces with castor oil and quinine.

As to rectal examination, there is no doubt that it is the best procedure in all cases, especially eclamptics, possibly in cesarean section or in those that might require any form of operative interference. But in patients that do not progress satisfactorily, or in those in whom rectal touch does not reveal all the necessary information, an aseptic vaginal examination should be made.

Dr. Johnson, closing the discussion:

I want to thank you for the discussion of this paper.

I am sorry that in this paper no one mentioned the head stethoscope. To my mind that is the best thing developed in recent years to protect the baby and give confidence to the obstetrician. If a man uses the head stethoscope and gets accustomed to it he will never dispense with it.

As to episiotomy, make the incision on the side most convenient. I make it on the left side, being right-handed.

Pituitrin is not used at the Chicago Lying-in Hospital for induction of labor, and is not used during labor at all. They claim they can control forceps but not pituitrin. I have used castor oil, quinine and pituitrin, according to the technic of Watson, of Toronto, but have not had any success with pituitrin when castor oil and quinine failed. For these cases it is best to use a bag.

I had the pleasure of seeing Dr. Garrison on his return from Potter's. He said that if he had to do a version in the future he would do it like Potter, but that he was not yet ready to do it on all occasions. Dr. De Lee does not criticise the version technic, but Potter's indication for version; he said that he thought it had caused a great many fetal deaths. I have seen two fetal deaths due to Potter's version, both cases due to the cervix contracting around the neck. That makes a very embarrassing situation.

As to rectal gloves, I am glad that was spoken of. It is certainly the thing. A good way to care for the gloves is: after the examination, pour a little lysol over the glove, wash off with water, dry on a towel, and powder; take it off your hand, turn it back right and it is then ready for the next examination.

As to Sidall's paper, I read that article and I do not think that in the preparation of those patients a sponge was placed in the introitus before preparing. This is a very essential point, as it prevents washing pathogenic bacteria into the introitus. I am not yet ready to stop preparing patients.

PRACTICE OF MEDICINE

Chairman: J. V. McGougan, M.D., Fayetteville

DIABETES SUFFERERS GIVEN A MESSAGE OF HOPE

(Chairman's Address)

A message of hope to sufferers with diabetes went out authentically recently from the medical research laboratories of the University of Toronto.

The eyes of the medical world today are focused on "Insulin," the remarkable extract of the island (Langerhans') bodies of the pancreas developed by F. G. Banting, a young surgeon of Toronto, with the assistance of C. H. Best, J. B. Collip and others working with him in the physiological laboratory of Professor J. J. R. MacLeod, of the Toronto University. It has been shown, both in diabetic (depancreatized) animals and in diabetic humans that the administration of insulin restores, for the time being, carbohydrate metabolism, removing hyperglycemia and causing the disappearance of acetone bodies when present. The modesty of medical men and scientific investigators of the genuine brand attempts to minimize the results obtained. The harm of exaggeration, and the injustice to both patients and research men in awakening false and premature hopes before the extracts can possibly be manufactured, cannot be overemphasized. But the fact remains that one of the most important discoveries in modern medical research has been made at the University of Toronto. It is not a cure for diabetes, its authors state. Within six months, however, the discovery will be used on a large scale, they hope, to prolong life quite considerably at least. There will be no secrecy, as from the beginning the medical profession will know all the facts.

Most significant of all the statements in the article issued by the experimenters to the medical profession, through the Canadian Medical Association Journal, is the little sentence: "The effects observed in depancreatized animals have been paralleled in man." An active pancreatic extract discovered and prepared by two young doctors, Banting and Best, the principal experimenters, first prolonged the life of a diabetic dog fifty-six days beyond the records established before. A definite improvement in the condition of seven human patients is reported in the article from a highly potent extract, discovered as a result of the animal experiments, injected twice a day under the skin.

Knowing from the work of previous investigators that something is produced in the pancreatic gland that controls the usage of sugar in the animal body, and believing that this native substance has not so far been extracted because it has been destroyed by the digestive ferments also present in this gland, F. G. Banting began working on this hypothesis, that the partial degeneration of the pancreas might affect the digesting cells before those producing the anti-diabetic substance. Work on the

new hypothesis began in May; all through the heat of the summer the two young men, soon fast friends, pushed their experiments night and day. Both had served overseas; they had this in common, too, and they often slept beside their work.

AIDED IN MANY WAYS

Best, as a physiologist and a biochemist, supplemented Banting and aided him in many ways. He, too, was a believer in taking the chance. Born in Maine, of Canadian parents, he came to Toronto for his education, and was the President for the year 1920. He was only eighteen years of age when he enlisted and went overseas with the Second Tank Battalion.

It was one day in last December when Banting and Best stood facing each other rather fatefully with hyperdermic syringes prepared to give themselves the first dose of the extract they had made from a whole ox pancreas at last. They had to prove to their satisfaction that it was not toxic. "I wouldn't ask anybody to take something that I wouldn't take myself," was Banting's attitude of mind. So Best gave Banting the first "shot"; later Banting returned the experimental compliment. Both lived to tell the tale.

"Pancreatic Extracts in the Treatment of Diabetes Mellitus," as the articles is called in the Canadian Medical Association Journal, is signed by J. P. Collip, W. R. Campbell and A. A. Fletcher as well. Dr. J. B. Collip was a third partner who joined forces with Banting and Best in January after the experiments on human beings were begun. A professor in biochemistry in the University of Edmonton on a year's leave of absence at Toronto University, his Alma Mater, Dr. Collip greatly facilitated the progress of the experiments through his work in refining and concentrating, or removing, all toxic qualities from the extract. Doctors Campbell and Fletcher, of the Department of Medicine and the Tronto General Hospital, superintended the experiments to make use of the discoveries from animals in connection with human beings.

STEP BY STEP

Step by step the paper, signed by the five, leads up to the experiments on the seven human beings. A long step forward toward this result was taken when it was proved that the active principle of the preparation was essentially the same from whatever animal it was prepared. This afforded a much more practicable method of securing larger quantities of extract. "A method was finally evolved," the article says, "by which an active extract which would retain its potency for at least one month could be obtained from normal adult ox pancreas. Daily injections of pancreatic extract prolonged the life of a completely diabetic dog to seventy days, at the end of which time the animal was chloroformed."

All through the summer and up to the present time the experimental work has been done on dogs. By the removal of the pancreas a condition which apparently most closely simulates diabetes in man was obtained.

"Diabetes is a condition in an animal," Professor MacLeod explained, "which makes it incapable of oxidizing sugar, so that sugar and the starches can no longer be utilized. It is by extracts to counteract this condition that a cure, if there ever is a cure, will come."

As now prepared, Insulin is extracted from adult ox pancreas by a process of fractional precipitation with alcohol. This sounds quite simple, but appears less so when one recalls that many had tried in vain to secure this pancreatic hormone freed from the destroying activity of the trypsin and other proteolytic enzymes present in pancreatic extracts. Nor was it arrived at simply by trial of chemical methods. The development of the procedure, step by step, has been modestly told by Banting, and is briefly outlined by MacLeod in "The British Medical Journal," November 4, 1922. It sounds like a romance in physiology, but it is, in fact, a piece of perfect physiologic research. A remarkable feature of the work is that it was executed in all its steps from physiologic experiments, through chemical and biochemical studies, animal observations, and clinical trial, in little more than a year.

Insulin is not yet obtainable by the profession at large; it is still in the stage of carefully controlled observation by a few selected men in Canada and this country, but their reports indicate beyond a reasonable doubt that Banting has made a brilliant contribution to medicine. Whether insulin will exercise any curative influence in diabetes it is too early to speculate. Perhaps, like thyroid extract, its effect will be only during the period of administration. Certainly, however, every surgeon, no less than his medical brother, will hail an agency that will promptly reduce glycemia, remove acidosis and prevent diabetic coma.

From present accounts it would appear that Banting has made one of the greatest advances in medicine of the twentieth century; probably the greatest therapeutic advance since the advent of salvarsan. And Insulin, with the life-giving powers that it has demonstrated, would, like so many other life-saving medical discoveries, have been impossible without animal experimentation.

The following notes were taken during a talk by Dr. Frederick G. Banting, of Toronto, Canada, before the Baltimore County Medical Society, in the Medical and Chirugical Faculty Building, Baltimore, Md., December 15, 1922.

Insulin was first obtained from a dog after ligation of the pancreatic duct. This caused atrophy and degeneration of the portion of the gland producing the external secretion (pancreatic juice).

It is a known fact that where a gland has both an internal and an external secretion the cells producing the former are the first to develop. This is especially true of the pancreas, as the body does not require the external secretion during fetal life. Working on this principle, Banting found that he was able to extract a very potent Insulin from the pancreas of a fetal calf under four months.

A study of this Insulin reveals the following facts:

(1) The active principle was universal in the animal kingdom.
(2) It was destroyed by boiling.
(3) It could be passed through a Berkfeld filter.
(4) It was easily preserved.
(5) It was non-toxic.
(6) It was not destroyed by alcohol.

When it was known that Insulin was not destroyed by alcohol it was comparatively easy to extract it from the adult beef pancreas, as all pancreatic enzymes are destroyed by 50% alcohol.

The dosage was now standardized by taking as a unit the amount of Insulin required to reduce the blood sugar of a 2 kilogram (2,000 grams) rabbit, starved for twenty-four hours, to .104%. When blood sugar was reduced to this percentage the rabbit went into convulsions; it recovered almost immediately after intravenous injection of glucose. It was later found that adrenalin hypodermically was most helpful after an overdose of Insulin. It mobilized the glycogen in the liver, thereby raising the blood sugar.

It was next found that Insulin reduced the blood sugar by causing an increase in the burning of sugar. This was proven by a study of the "respiratory quotient."

In depancreatized dogs the amount of glycogen in the liver was reduced to 5%. Under insulin treatment it was raised to 11%. The fat volume was also raised.

Clinically it is advisable to determine a patient's tolerance before the administration of Insulin. After this is determined, patients are put on a high fat diet. There is no danger of acidosis when the carbohydrates are being utilized. One cubic centimeter of Insulin hypodermically will burn 42 grams of carbohydrates.

An overdose of Insulin causes a hypoglycemia, the blood sugar going as low as .032%. Before patients reach this stage they have a definite feeling that they are going to have a reaction. If orange juice or candy is given at this time the reaction does not develop. If no preventive steps are taken the patient will become dazed; his pulse will decrease and finally he will become comatose. Glucose given intravenously, or adrenalin followed by glucose, is a specific in this condition.

After determining a patients' tolerance the diet is increased to normal for that individual and enough Insulin administered to render the urine sugar-free. This is given hypodermically, usually twice a day before meals. Sixty units a day may be required to produce the blood sugar, but after this the dosage can be markedly lowered, i. e., from 2½ to 5 units a day.

Following the production of what appears to be a concentrated internal secretion of the pancreas and the demonstration of its physiological activity in animals, and, under careful control, its relatively low toxicity, we are presenting a preliminary report on the pharmacological activity of this extract in human diabetes mellitus. Clinical observations at this juncture would appear to justify the following conclusions:

1. Blood sugar can be markedly reduced to the normal values.

2. Glycosuria (sugar in the urine) can be abolished.

3. Acetone bodies (which cause many of the toxic symptoms in diabetes) can be made to disappear from the urine.

4. The respiratory quotient shows evidence of increased utilization of carbohydrates (which means that by analyzing and comparing the amount of oxygen consumed and the amount of carbon dioxide given off, you can show that sugar, rather than proteins and fats, is being burned by the tissues.)

5. A definite improvement is observed in the general condition of these patients and, in addition, they themselves report a subjective sense of well-being and increased vigor for a period following the administration of these preparations.

FIRST CASE REPORTED

The first case reported is that of a boy, aged 14, a severe case of juvenile diabetes. Previous to his admission to the hospital he had been starved without evident benefit. During the first month of his stay in the hospital careful dietetic regulation failed to influence the course of the disease and soon his clinical condition made it evident that he was becoming definitely worse. "On January 11th the extracts given were not as concentrated as those used at a later date, and, other than slightly lowered excretion and a 25% fall in the blood sugar level, no clinical benefit was evidenced."

But the experiments were continued. "Daily injections of the extract were made from January 23d to February 4th (excepting January 25th and 26th). This resulted in immediate improvement." Charts show the marked fall in the amount of sugar in the urine and the blood.

Another patient, it is learned from another source, ate dates for the first time in three years, after taking the extracts. He took sugar in his tea, and altogether 110 grams. He ate eleven times more sugar than on an ordinary day under diet; something that would have killed him previous to taking the extracts.

"All patients," says the report, "were clinically improved. It is difficult to put in words what is meant by clinical improvement. Those who have been treating diabetes will have recognized as early signs of improvement a certain change in the skin; the appearance of the eyes; the behavior of the patient; his mental and psychic activity, and physical evidences as well as his testimony of increased vigor and desire to use his muscles. This is the nature of the improvement seen clinically as a result of the administration of these extracts, and, while it is of temporary nature, we believe that it justifies the hope of more permanent results following more adequate and carefully registered dosage."

CLINICAL USAGE IN DIABETES

The action in man nearly parallels that in lower animals. MacLeod and others tentatively tried out the extract in diabetes. One has to be

cautious in dosage. Fortunately injections of glucose immediately antidote any toxic effect.

The drug has been used in a sufficient number of cases in hospital services to warrant the statement that it is a systematic remedy of great value in cases of diabetes otherwise properly handled, removing the principal symptoms for a period of several hours after each dose given subcutaneously. No claim is made that the extract will cure diabetes. It is hoped that in some case the rest given the deranged pancreas by prolonged administration will restore the pancreatic function. In cases of threatened diabetic coma the drug acts promptly and is of proved value. The dosage can not now be given; in each case the percentage of blood sugar should be determined and the patient kept under observation as to toxic symptoms. The drug is an antidote and it must be determined how much antidotal dosage is needed in each individual case.

It has been found that the extract is highly poisonous when given in improper amounts. This shows a decided danger in regulating the dosage, necessitating slow and careful work. All the investigators who have been interviewed have insisted on the importance of this part of the work.

The modern treatment of diabetes consists in a reduction of the amount of carbohydrates (the sugars and starches) and, if necessary, also of protein (meat, eggs, etc.) in the diet, to such a degree that the percentage of sugar in the blood returns to the normal level. Professor MacLeod explained: "When this is accomplished," he said, "the weakened functions of the body which control the assimilation (metabolism) of the starches and fats are relieved of the overstrain under which they have been progressively laboring, and as a result of which they have been progressively becoming more weakened. The rest afforded the functions by reducing the diet allows them to recuperate so that after some time it is not infrequently the case that some carbohydrates can again be tolerated without producing the symptoms of the disease."

SUMMING UP

Professor MacLeod pointed out how it had usually been considered that some structure in the pancreas, such as the islands of Langerhans, forms the organs in which this function resides, and that the latter is carried out by means of an internal secretion. Final proof up to these experiments of these hypotheses had been unavailable; however, because experimental diabetes in animals following the removal of the pancreas and diabetes in man is frequently associated with pathological changes in the gland, it has been impossible to show that the administration of an extract had any significant or appreciable effect in reducing the stored-up sugar or ameliorating the symptoms at all. Some of these attempts, however, especially with more modern investigators, have met with a certain amount of success; at any rate, a degree warranted to justify further intensive research.

Not alone were the objective symptoms relieved by the administra-

tion of the Toronto extract, Professor MacLeod admitted, but the well-being of the patient was undoubtedly strikingly improved.

"But these clinical observations would not have been warranted," he added, "had Banting and Best not previously shown in experiments on diabetic (depancreatized) dogs that exactly similar results are obtained, and, most encouraging of all, that in one animal at least, life could be prolonged by daily injections of extract far beyond the time during which untreated animals could live."

COMMENT

It is not fair to claim Insulin as the only pancreatic extract of value in the treatment of diabetes, but it is the most carefully worked out. The drug is a great discovery, but its clinical usage must be studied very carefully by experts before it is safe for use by the general practitioner.

The conservative view is that Insulin is an antidote, which will have to be given once or twice daily through the life of a confirmed diabetic.

Its dosage must be scientifically controlled and the physician must at all times be ready to inject glucose solution if toxic symptoms appear. Fatalities may occur under careless or unregulated usage. Unauthorized preparations of Insulin must be avoided, as they may be irritating or toxic. Cases must not be considered cured because certain serious symptoms disappear under the use of the drug.

DISCUSSION

Dr. W. T. Rainey, Fayetteville:

I think the Doctor has discussed the subject so fully in his paper that there is not much more to say about it.

Dr. Wilder, of the Mayo Clinic, has been doing a great deal of this work since its discovery by Dr. Banting. The dosage is graded in units, the unit being the amount of Insulin which will reduce the blood sugar in the rabbit from .1 to .04. The dose varies from ten to fifty units, depending upon the food needs of the patient and the severity of the diabetes. It is not advisable, however, to give over forty units outside of the hospital. Then, too, the expense has to be considered. Thirty units a day would cost about $1.50 for the Insulin alone.

If a diabetic can take care of 1,500 calories, divided among the carbohydrates, fats and proteins, the dosage, therefore, would be the amount of Insulin which would be needed to take care of the difference. It is given in the morning before breakfast, and then a second injection at about 3:00 p. m., if needed. The reaction which follows may be mild or severe. In the mild cases there is a feeling of great drowsiness or fatigue. They have used orange juice to give carbohydrates, and some give lump sugar. Usually half an orange will counteract the reaction. If it goes on they become unconscious finally, and may die in a convulsion. In these cases the use of adrenalin will bring them back to consciousness. The patient is instructed as to his care, instructed in food

values and how to prepare his own menus, so that he can take care of himself when he gets out of the hospital. In case an infection arises during the taking of the preparation they cut the dosage in half, because the patient usually loses his appetite, and they do not pay any attention to the appearance of sugar as long as there is no acetic acid. The patient is taught to test his urine each morning and each night. The sugar will frequently appear in the evening speciment or in the morning, because the effect of the Insulin has disappeared. If only one specimen shows sugar the dose is not increased; if both speciments show sugar, the diet is either cut down or the Insulin increased, according to the needs of the patient. Diacetic acid is the danger sign to be looked for.

This preparation is put out by Eli Lilly, under the supervision of the University of Toronto, and this company will soon be able to supply, I hope, sufficient amount to take care of all the diabetics in the country.

Dr. J. P. Munroe, Charlotte:

I had the pleasure of hearing Dr. MacLeod somewhat over a year ago in Washington, and his findings and work were so enthusiastically received that a large gathering of medical men gave him a rising vote of thanks. At the University of Pennsylvania, where I saw this remedy used recently, they usually gave the patients twenty-five units a day and increased or decreased according to the necessities of the case.

Up to this time, as our Chairman has said, the effects are temporary. I asked some one in Philadelphia what the hope was of getting permanent results, and the answer was, "So far as we know now, the patient will become a pincushion for the rest of his life, having to use it two or three times a day indefinitely." We are using it on a patient twice a day with apparent benefit. Others use it only once a day, giving in one dose the maximum allowed for the day. The results seem to be favorable.

Dr. F. R. Taylor, High Point:

I have not very much to say on this subject. I saw Dr. Joslin use Insulin last fall, but have had no personal experience with it whatever. I saw one very interesting case, a boy of about thirteen years of age who had both diabetes and nephritis. Dr. Joslin had him on Insulin and raised his carbohydrate tolerance, and was feeding him on a very low protein diet. The boy was gaining in weight from what was practically a living skeleton, and was doing well.

Dr. F. M. Hanes, Winston-Salem:

Allen has said that since diabetes is a functional disease it must be curable. Insulin, it would seem, will do much to relieve the overstrained function and thus promote a cure.

In regard to obtaining Insulin, the Lilly Company has laid down certain requirements which any well trained physician in touch with a laboratory should be able to fulfill. It is a drug that will have to be used with the greatest care.

It would be highly erroneous if, in the present enthusiasm for Insulin, we should lose sight of the fact that diabetes has been treated successfully with modern dietary methods. In the vast majority of cases methods worked out heretofore are still of great value and usually all that the patient needs. Insulin will not relieve us of the patient supervision of diabetics, and I am afraid that the result of newspaper information on the subject will tend to make this careful supervision more difficult. The patient is going to want a "shot in the arm" to relieve him of all his troubles.

I wonder if I would tire you by referring to something a little different. It is well known that an animal with an undescended testicle develops normally secondary sexual characteristics. Such cryptorchids are very commonly found in pigs coming to slaughter, both testicles not infrequently remaining abdominal. Such retained testicles are nearly as large as the descended ones and are found to be composed almost exclusively of large interstitial cells. Now, since the interstitial cell in its function has been shown to govern the development of secondary sexual characteristics, it would be very interesting to study the effect of an extract of these cells, after the manner of Insulin, upon the physiology of animals, both the castrated and senile. Steinach of Vienna has brought the question forward by some very successful transplantation work, and we have read quite a lot in popular lierature of the so-called "monkey-gland" operation. It would seem possible by the study I have just indicated to approach the problem from a different angle.

Dr. Reuben McBrayer, Sanatorium:

I heard no mention made of diabetic gangrene. In four cases that I was able to observe for two or three weeks in Philadelphia, Insulin did nothing at all for the gangrene, so that the surgeon had to be called just the same. I only mention this because, with the enthusiastic reports on the value of Insulin, we might delay surgery until it really has been a hurt to the patient. I would like to ask Dr. Rainey, as well as our Chairman, if that has been their observation.

Another thing: Is the Mayo Clinic accepting the figures for the caloric needs of a patient, or are they determining the caloric needs of that particular patient by a surface area formula?

One other thing that I would like to refer to is this: Colonel Hanes implied that we might be on our way to curing diabetes; we certainly cannot say that we are not. Certainly glucose tolerance tells us something about the patient's ability to burn sugar. If we could determine diabetes more easily, and sooner, wouldn't patients have a better opportunity to regain the power they have lost? In that event we would have the case cured, just as Dr. MacNider teaches that the kidney will recover impaired function better in a normal environment than in an abnormal environment.

Dr. Tom A. Williams, Washington, D. C.:

I am sorry that I have had no experience with this treatment, but, like every other physician, I have followed its development very closely.

In listening to this discussion I have noticed that it is one that reflects the fact that medical men of our day are doing some deep thinking for themselves. I refer more particularly to Dr. Hanes; what he said showed a direction of thinking which I would like to say a word about.

Quoting from Dr. Allen, that diabetes is a functional disease, I think that a dangerous word to use, because all diseases are functional, yet certain diseases become structural or organic, and if there ever was one, diabetes is one, because it is due to destruction of or structural interference with an organ, viz., the islands of Langerhans. It is because these organs are interfered with or destroyed that the function can not be performed. Mobilization of sugar does not take place except in so far as the cells remain active. The disease is one which is mathematically proportionately stable, just as one can do with the kidney in nephritis, when there is a mathematically determinable destruction of the tubules of Henle. Of course, it is true that in certain phases in disease of the kidney, the incapacity of that kidney may be greater than the actual destruction of the cells, because the cells may cease to function from edema, toxin or pressure. In this case, when the edema is removed the cells will again functionate, because they are not dead, but in diabetes the cells of the islands are dead, and there can be no further function except as those cells permit. So we can have no hope of treating a severe diabetic until he is self-sustaining, or eating as you or I, because he has not the cells to do it with unless we are ever able to grow the island cells. It is just as if one were to destroy the brain cells by trauma or, as in apoplexy, an exudate absorbed. The patient improves more and more, becomes less and less hemiplegic, but he is always a paralytic to a certain extent, because certain cells have been destroyed. So in pancreatic disease when destruction has occurred. But when a brain inadequacy is caused by toxin purely, or by shock, then integrity of function is restored when toxin no longer acts or a trauma is recovered from. These are of short duration and are not spoken of as static hemiplegia. So, with the pancreas, we speak of glycosuria, a functional state, and not of diabetes, a static condition due to fault of structure, if our terms are to have any meaning at all.

Dr. Rainey:

I have forgotten how many cases of gangrene they had, Dr. McBrayer, but they had not noticed any improvement after they put them on Insulin.

Dr. McGougan, closing the discussion:

I would like to say just this—in my opinion there is no doubt that a valuable discovery has been made. Just how beneficial it is going to be I do not know, but we know, in these modern days, when patients become obstreperous with the rigid diet we have to give them, they are going to get on a carbohydrate jag, and if we can give them a few doses of Insulin and put a fellow on his feed so as to put him in condition that he may

enjoy his Thanksgiving and Christmas dinner, I feel that we have helped that patient somewhat.

Dr. Hanes:

To refer to Dr. Williams' statement, let me point out that, whereas practically all diseases may be considered organic in the sense of atomic change or destruction, it has been known for a long time that there is often absence of gross destruction of the islands of Langerhans in diabetes. It is certainly possible, and clinical facts bear out the belief, that much of the lowered carbohydrate tolerance in diabetes is functional and capable of recuperation under proper conditions. An analogous case is a chronic passively congested kidney which, under digitalis, may function almost normally again.

THE INTERRUPTION OF PREGNANCY IN TUBERCULOSIS BY HYSTEROTOMY; PRODUCTION OF STERILITY; LOCAL ANESTHESIA

Foy Roberson, M.D., F. A. C. S., Durham

It is estimated that 65,000 women die in the United States every year of tuberculosis, and it is further estimated that 35,000 tuberculous women become pregnant each year. The laws of the State of North Carolina require a physical examination of candidates for matrimony, and in the event that either party is found to be suffering from active tuberculosis, marriage is forbidden by law. We can therefore see that pregnancy in the tuberculous becomes a very serious consideration.

The object of this paper is to bring to our attention a method of relieving the tuberculous woman of gestation should it become desirable to do so, hysterotomy, and for that reason it is necessary to go into indications for such procedure. Hysterotomy is not a new operation, since it was performed in Europe in the year 1610 for the relief of full term pregnancy (1), and it is said that the patient lived twenty-five days. It was then called cesarean section. Modern surgery has made it possible to do hysterotomy at any stage of pregnancy when it is desirable, Deaver, in this country, advocated hysterotomy almost as a routine precedure in clearing up obscure conditions within the uterus, believing the operation to be more surgical than a blind curettement.

Most textbooks of obstetrics give as the indication for therapeutic abortion any condition in which the pregnancy is apt to cause the death of the mother. Hirst (2) in his "Textbook of Obstetrics" states that if in the course of pregnancy some disease arises as a direct consequence of gestation, or if a woman suffering from a disease is made much worse by the existing pregnancy and if her life is distinctly in danger in consequence, it is not only justifiable but it is the physician's duty to terminate gestation and thus to save one life and that the more valuable of the two, instead of sacrificing both the mother and fetus, adding that the induction of abortion should be undertaken as reluctantly as one would commit justifiable homicide. Interruption of pregnancy before the one hundred and eighteenth day is called the induction of abortion.

In our efforts to control the spread of tuberculosis another angle to the situation may arise, because, while it is generally conceded that tuberculosis is not inherited, yet it is well known that the tendency is inherited, and it is a matter of common knowledge that the offspring of tuberculous parents are very prone to develop tuberculosis. So from that angle the question of the tuberculous woman's bearing children deserves consideration.

At one time it was thought that pregnancy became a distinct benefit to the tuberculous patient, from the fact that women usually take on weight at that time and their general health is usually apparently somewhat improved. It is now known and very well recognized that pregnancy very often does great harm to the tuberculous woman and may shorten her days to a marked extent, to say nothing of the great liability of the offspring to become tuberculous, or even if it does not become tuberculous to be left motherless and later succumb to some other disease. It is probably true that a great many women who are not known to be tuberculous become pregnant and bear offspring without serious harm. These cases are those which, of course, are not active, and we can see that while pregnancy becomes a real menace to the tuberculous woman as a rule, yet a great many of these patients are able to handle the condition with no serious trouble. So it is necessary that our patients become individualized before we decide which ones should be allowed to proceed and which, if any, should be interrupted.

Norris and Murphy (3) made a study of a large number of cases at the Phipps Institute in Philadelphia and their deductions were about as follows: (a) The combination of pregnancy and pulmonary tuberculosis is a common one. (b) Pulmonary tuberculosis exerts little or no influence against conception. (c) Pulmonary tuberculosis exerts but little influence on the course of pregnancy, and except in the advanced stages exerts little or no influence toward causing abortion, miscarriage or premature labor. (d) About 20 to 30 per cent of mild, quiescent tuberculosis and 70 to 90 per cent of more advanced cases exhibit exacerbation during pregnancy or the puerperium. (e) Unless the pulmonary lesions have been quiescent for a moderately prolonged period, tuberculosis women should not marry. (f) Tuberculous women should not become pregnant unless the disease is in the first stage and has been quiescent for a minimum period of two years. (g) Prior to the fifth month of pregnancy the uterus should be emptied if the disease manifests any evidence of becoming active. (h) About 65 to 70 per cent of suitable cases will be benefited by this treatment, provided it is employed as soon as acute symptoms arise and provided that proper after-treatment is instituted. (i) Sterilization is not suitable as a routine procedure; the patient should be individualized; and in many cases it will be more suitable to empty the uterus without an anesthetic. (j) After the fifth month of pregnancy it is generally advisable to treat these cases expectantly. (k) Infants should not nurse from tuberculous mothers and should be especially guarded from infection.

We do not feel that any ironclad rule can be laid down in regard to at what stage of the pregnancy it should become a foregone conclusion

that interruption should take place, because if the tuberculous patient is becoming progressively worse, even after the fifth month, we think it would be a great mistake not to attempt to do something for her. One can see from the foregoing that pregnancy in the tuberculous is a serious condition and always deserves the most careful and sympathetic attention of the attending physician. It is our feeling that no one person should bear the responsibility either of saying whether the patient is tuberculous or of determining whether or not the pregnancy shall be interrupted. When a pregnant woman is suspected of having tuberculosis, if an expert and experienced diagnostician of chest conditions is available the patient should certainly have the benefit of his opinion, and should it be decided that the case is one for interruption, here again it becomes necessary to give the case thorough consideration.

A number of different methods of interruption are available. If in the early weeks, and if it is not desirable to sterilize the patient, the method of curettement under gas anesthesia is often satisfactory. If the case has progressed beyond the curettement stage, slow delivery by dilating and packing the cervix is possible. The principal object of this paper is to describe a method which, though not new, is probably often overlooked in this class of cases and which is sometimes highly satisfactory. I refer to the cases where the pregnancy has advanced beyond the curettement stage and where it may be desirable to sterilize the patient. Such a procedure, of course, involves abdominal section and hysterotomy, and since such an operation is a major procedure and ordinarily requires a general anesthetic, which is, of course, contraindicated in a pulmonary condition, any variation from the usual technique of abdominal operations which will minimize the danger of making the tuberclous condition worse will certainly be of great benefit to the tuberculous patient.

Recently there came under my observation a woman who was pregnant about four months. Between the third and fourth months the patient began running an afternoon temperature and complained of not feeling well generally. Her physician put her through a very careful physical examination and tuberculosis was suspected. She was later examined by an expert in tuberculosis who made a definite diagnosis of that condition and even decided that she had some fluid in the pleural cavity, and the x-ray showed morbid involvement of both lungs. Both the family physician and the tuberculosis specialist were of the opinion that the pregnancy should be interrupted and that she should be sterilized, for the reason that the condition was so far advanced, and even though the loss of weight had been small and she had never before suspected tuberculosis, it would be extremely doubtful if she could ever overcome the tuberculosis and at the same time bear children. Knowing that cesarean section had been accomplished under local anethesia, and knowing that morphia and scopolamin are of great help in such cases, and also knowing that the patient would have a much better opportunity of being relieved of the pregnant condition without being made actually worse if she did not have to undergo an abdominal operation combined with a general anethestic, we decided to resort to this method of opera-

tion: One hour before operation she was given 1/100 of hyoscin and 1/8 of morphia; this dose was repeated in half an hour. When she came to the operating table she was almost asleep. Using ½ of 1% solution of novocain the skin, abdominal fat, fascia, muscle and peritoneum were injected with this solution in successive steps. The abdomen was opened, the pregnant uterus delivered, the fallopian tubes sectioned and tied with linen, the uterus incised, fetus and placenta removed, the incision in the uterus closed and the peritoneum, muscle, fascia and skin closed in successive layers, and the patient knew practically nothing about what was going on. The procedure was very satisfactory from the standpoint of both the patient and the surgeon, and she made a splendid recovery from the operation and was later admitted to the State Sanatorium for treatment of her tuberculous condition.

I simply submit this method to you for your consideration, not claiming anything new unless it be its use in this particular class of cases, and believing that it may be of great help in a class of tuberculous women who should be relieved of the pregnancy, and at the same time prevented from becoming pregnant again, with the least amount of operative shock and lung injury.

There are two great factors to be established: First, that the woman is tuberculous and pregnant and that it is not desirable that she bear the present or future offspring; second, the method of performing the interruptive operation at one sitting with the least amount of operative and anesthetic injury to the mother. Hysterotomy under local anesthesia combined with morphia and hyoscin seems to us to be the most satisfactory method.

1. Trautman in Wittenberg.
2. Hirst's Textbook of Obstetrics.
3. American Journal of Obstetrics and Gynecology.

DISCUSSION

Dr. P. P. McCain, Sanatorium:

This problem of the pregnant tuberculous woman has always been a knotty one. There is so much at stake that it should not be decided, as Dr. Roberson brought out, until after consultation.

If, after consultation, an interruption is decided upon, it should be done only after a fair and square understanding with both the husband and wife that she shall never become pregnant again. Not infrequently a woman returns a few months after interference saying that she is pregnant, and expects you to recommend another interruption.

There is no doubt that confinement and, to a less extent, pregnancy have a bad effect upon the tuberculous woman. An inactive lesion is often made active, and a small lesion is often made to spread very rapidly. In the moderately advanced case I think the medical profession as a whole is of the opinion that the pregnancy should be interrupted if it is discovered before the end of the third month. After that time it is

often as serious to have an interruption as it is for the pregnancy to continue, and it is a matter for the medical man and the surgeon to decide in consultation.

Dr. H. A. Royster, Raleigh:

I did not hear all of the paper, but I have discussed this subject before with my friend Dr. Roberson and think I understand the nature of his remarks and the trend of his judgment in the matter, with practically all of which I agree.

We have here need for the medical man, the obstetrician, and, if the latter be not a surgeon (as I am afraid in many cases he is not) then, also, the surgeon. Consultation is essential.

A great many tuberculous women become pregnant over and over, and sometimes oftener than the average woman. It is not proper to interrupt it at that stage, it seems to me, because if pulmonary tuberculosis is present it is more apt to be lighted up at once. Then, if the patient is going to get better, she usually improves up to the time of labor; later she may have a harder time. Of course, a diagnosis of tuberculosis of the lungs is easier then than in its incipiency.

We had a case at the third month in which the medical consultant said we might terminate the pregnancy because the patient would not get along; last fall she had influenza, running a temperature for a month or two. She became pregnant in January. Since that time she has improved in every way, and the temperature has gone, and in consultation with another physician and with the x-ray man it was concluded that the tuberculosis, if ever active, is gone. I do not know what the pathology was, but all of the signs have disappeared.

I think there is no question about the fact that, if the patient, at the time the child is viable, has an undoubted tuberculosis and upon that it is determined to interfere, the operation should be done under local anesthesia, as described by the reader. At the same time it is proper to produce sterility by the safe method of tying off the tubes, because we have to consider the present, the future and the further future state of the patient.

The best way to do cesarean section under any emergency condition is under local anesthesia. The ease with which this is done, the rapidity with which it is performed, and the splendid convalescence of the patient are all matters which have been determined.

I might mention what is probably the best technic—a high incision with its middle at the level of and to the right of the naval. The incision into the uterus is made slightly to the left of the middle, the child extracted through the smallest opening possible, the edges of the uterus held by the hands of the assistant and sewed up—all without delivering the uterus outside the abdomen at all.

It is well to call attention to this sort of case, because it is instructive

to medical men, obstetricians, and surgeons. I commend the conclusions of the essayist, because I know they are based upon sound judgment.

Dr. J. M. Templeton, Cary:

I have seen cases of pregnancy in tuberculous women where they went on to term and apparently recovered. I know of one case, an unquestioned case of tuberculosis and the woman has had some half-dozen children and is still living. I have seen, on the other hand, an infected woman improve during pregnancy, and after delivery die very quickly. It is a very knotty problem and hard to decide.

I simply rose to say that, in the main, I agree with the distinguished genlemen who have spoken. I would not, however, agree as to sterilization. That is the knottiest part of the whole problem, in my opinion, because in this day we propose to cure tuberculosis, and it would be very unfortunate if we were to sterilize a woman who might afterwards be cured of tuberculosis. I would be very much against it, unless the indications be very clear, and certainly in the incipient stage I should oppose it.

THE STATUS OF THE PRACTICE OF MEDICINE THIRTY YEARS AGO AS COMPARED WITH TODAY

K. G. Averitt, M.D., Fayetteville, R. F. D. 9

The general practice of medicine has undergone many changes during the last thirty years, and while we are yet far from perfection in the art and science of the practice we are much nearer it than we were in those days, because some of the changes have done more to prevent and eradicate disease than all other agencies combined.

Thirty years ago a man entering the practice of medicine was usually well grounded in gross anatomy, but he knew little about the functions of the various organs of the body, because the science of physiology in that day only described the gross functions of the organs, and told us nothing about the internal secretions. He treated disease in an empirical way. He gave opium for pain and quinine for malaria, because these remedies had been handed down to him by the profession, and not because he knew when and when not to give opium for pain, or upon what the quinine acted in malaria. He gave mercury for syphilis because it had been proven a specific for the disease, but he did not know anything about the spirochaeta, the micro-organism causing the disease, or the destructive effect of salvarsan and neosalvarson on the organism.

The general practitioner in that day gave medicine for every condition. He seldom advised a surgical operation for any internal condition, and, as he was not acquainted with appendicitis, it is a question in my mind till this day how many patients we lost with this condition, and told the bereaved ones that the patient died of peritonitis, typhlitis, or some other "itis."

Typhoid fever was very common in those days, because we did not

know the cause or prevention of the disease. We knew in a general way that drinking water often contained the morbific principle, but never suspected the house fly as the chief carrier of the germ. Inoculation with dead germs in order to produce immunity against the disease was unknown, and we contented ourselves, when we were treating a case, with an order to the family to clean up around the house and boil the drinking water—both very good measures to carry out, but they did not go far enough, as they still left the patient exposed to a swarm of flies that crawled over the feces, and then over other people's rations, thus spreading infection to the other members of the family and their neighbors.

Vaccination to prevent typhoid fever should be regarded as one of the greatest advances made in the practice of modern medicine, because the disease, prior to that discovery, was one of the worst diseases with which the physician had to contend, and now it is seldom seen. It is true it confers immunity only for two or three years, but it is harmless and can easily be repeated. In former times the disease was very prevalent among troops and sometimes killed as many as the enemy's bullets, but the inoculation of the troops in the armies involved in the World War almost eliminated the disease, and aided very much in bringing that terrific struggle to an early termination.

We had a very limited knowledge of malaria in those days. We believed it was a miasmatic disease, because of the prevalence of the disease about marshes and swamps, and never dreamed that it was transmitted by the anopheles mosquito, which breeds in stagnant water, and could be prevented by measures with which we are all familiar now—measures which were worked out by Gorgas and the men who cleared the Panama Canal Zone of the disease, and enabled this Government to cut the Canal, one of the most stupendous tasks ever undertaken and accomplished by man.

We believed yellow fever was an infectious disease and advised the isolation of the patient, and the disinfection of everything that had been in contact with the patient and of the mail from infected zones—measures which were superfluous, because this disease is transmitted by another kind of mosquito, and all we have to do to prevent the disease is to destroy the pest or screen the inhabitants of the place from its bite.

We did not know the cause or prevention of diphtheria, but spent many hours trying to work out prescriptions to cure the disease, and lost practically all our cases. Today antitoxin cures practically one hundred per cent of the cases, and this is not satisfactory, because the use of toxin-antitoxin will annihilate the disease in a few years, if we can persuade the laity to have all their children vaccinated.

Our knowledge of vaccines and serums in that day was limited to smallpox vaccine, and then as now we were abused by the public for advocating its use. The people told frightful tales about sore arms and the number of limbs that had been sacrificed by the procedure. They seemed to think it was a scheme of the doctors to make money. This

opposition is still abroad among the people and it will take a lot of preaching to entirely overcome it, but it is gradually growing weaker.

We knew nothing about endocrines, and therefore did not differentiate between hypo- and hypersecretion. We are still very far from knowing all about this subject, but wonders have been accomplished in the study of the glands and their functions and it is highly probable that many intricate and complex processes that now are little understood will be readily comprehended when the subject is fully worked out.

Dietetics was a subject that occupied very little of the time of the general practitioner. Diseases due to faulty diet were known to exist, but we did not have any idea of vitamins, or the essential dietary substances that we now know prevent such diseases as beriberi and pellagra.

Hospitals and trained nurses were available only in the large cities, and x-ray, radium, and many instruments of precision now in daily use were unknown even to the men who conducted the hospitals.

With all our knowledge in such a chaotic state it is a wonder how we saved any patients, but somehow we did, and the undertakers were little more prosperous than now.

When we compare our knowledge of that not very remote time with our knowledge today, and see how little we knew then about the ordinary infectious diseases and how much we know now about their cause, prevention and treatment, we are sometimes tempted to think that the gen-practitioner will soon cease to exist, but on a little closer study we find that we have not reached perfection yet and that there is still plenty for us to learn.

Diseases due to filterable viruses or of doubtful etiology still exist, and much work remains to be done in this class of diseases before we understand them. Further study and investigation will no doubt clear up the mystery, and vaccines and serums will be discovered to cure them and to immunize people against them.

Conditions due to the excessive use of alcohol, opium, cocain and other habit-forming drugs have been largely eliminated by laws restricting their sale, but we still have food intoxications, and while we understand botulism there are some cases of food-poisoning not well understood, and there is work left in this line before we know the cause and proper treatment of some of these conditions.

Food deficiency diseases offer a field for the investigator. We have a much better idea of these diseases than we did thirty years ago, but we are far from knowing all about them.

Disorders of metabolism offer a broad field for investigation today. Thirty years ago we thought little about these disorders, but much work has been done in this line in recent years, and we now have a better idea eral practice of medicine has accomplished its mission and the general of them and their treatment.

Diseases of the digestive system gave us trouble in the old days and will be with us till man changes his abode, because he will abuse his stomach. Treatment of these conditions, however, has undergone great changes in latter years, and we are now paying more attention to them and doing a better part by them. We no longer think that a bottle of Lactopeptin, with no instruction as to diet and right living, will cure them.

Diseases of the respiratory tract will remain with us as long as we have to breathe air to live, but the body can be rendered immune to some of them by the use of proper vaccines, and we are now on the eve of a great revelation in the prevention of pneumonia, according to reports in some of the journals. Treatment of these conditions has materially changed for the better in recent years. We now depend less on drugs and more on an abundance of fresh air to cure them.

Diseases of the circulatory system will always be with us, but there is great need for improvement in the treatment of these diseases. It is not good practice to give every patient a bottle of digitalis or some heart tonic, and stop at this, as we did years ago. We now try to make a correct diagnosis of the lesion, then give the patient the proper medicine in the proper dose, and instruct him how to live.

Progress has been made in diseases of the kidneys and blood-forming organs, but much still remains to be investigated in the diseases of these organs.

Disease of the nervous system is a very broad and inviting field for study and investigation, but very properly belongs to the neurologist.

The greatest advance in the whole domain of medicine has been made in the vast amount of information gained about the functions of the various organs of the body, by study of the ductless and other glands. Thirty years ago we were told that the ductless glands had no known function. Today we know that they supply secretions and perform functions absolutely essential to the proper working and nutrition of the organs of the body. In addition to the functions of the other glands with which we were familiar in that day, we now know that many of them also supply internal secretions that are essential for the system.

The effects of some of the preparations of these glands in certain conditions is little short of magical, and we are sometimes tempted to believe that all obscure conditions for which we can find no other cause are due to a hypo- or a hyper-secretion of some of these glands, and can be relieved by prescribing an extract of the gland or by removing part or all of the gland, accordingly as we have an under or oversecretion of the gland. It takes good judgment sometimes to decide this point. We should be on our guard when consulted by a patient suffering with goitre, and not make matters worse by prescribing the secretion when the patient is already burning up with it.

Many other improvements in the practice of medicine could be named, but enough have been mentioned to show that during the last

thirty years the profession has been the greatest benefactor to the human race that the world has ever seen, and that, if we make as much progress during the next thirty years as we have in the last thirty, we shall be very near the coveted goal of perfection.

The world is inclined to find fault with every discovery made by us till they see it proven, but the people are beginning to see that we have made wonderful progress in our fight against disease in recent years and that we are determined to continue the fight till all conquerable diseases are conquered. Then they will quietly accept the situation, bless us for our service, and stop following after osteopaths, chiropractors, and other cults that have never made a discovery worth a penny.

We did well in the old days; we can do and are doing better now. Our methods of treatment and diagnosis were crude then; today they are more exact. Travel was slow then. We could see only a few patients in a day. Good roads and automobiles today make it possible for us to see scores of patients in a day.

All this progress creates a determination in us to press forward for greater things in the future, and we shall continue to press forward till we master what is left to be found out about the cause, prevention and treatment of disease.

Dr. A. A. Kent, Lenoir:

I have been sitting here in silence, listening and learning, and have been perfectly charmed to hear these intricate medical subjects so splendidly discussed. I have had thoughts that I appreciate myself, but I felt that they would not be illuminating, and a bit out of place beside the thoughts of such scientific gentlemen as Dr. McBrayer and others.

I have been made to pause in wonder, Dr. Averitt, sometimes, when I review the amazing progress which has been made in medicine during my term of active work as a general practitioner. I have wondered what would be accomplished during the next fifty years. I believe we shall well nigh reach the goal of supremacy over disease.

I wish that I could fully understand some of the subjects that I have heard discussed this morning in one way and another, and then make active practical application of this knowledge to the welfare of the people in my immediate community, but it has not yet quite sufficiently emerged from the experimental stage for that. Yet these advanced thoughts are in the main very fascinating to me and I would love to pursue them.

I have differed sometimes in my home town with the ideas of the other general practitioners. I hold different ideas from some that I have heard advanced this morning. We doctors have different personalities. It could not be expected that we would always agree with each other and run in the same groove—and we are all just throwing out ideas.

The one thing with which I have especially differed this morning is the matter of sterilization of tuberculous people. I am going to get back to that, if you will pardon me, to the handling of tuberculous women.

The thing that comes especially to my mind is the questionability of the medical law which we doctors have so ruthlessly made, that a tuberculous man or woman shall not marry. The law is unconstitutional, of course, because the Constitution guarantees to every person the right of life, liberty and the pursuit of happiness. This law stands as a barrier to the highest measure of happiness that could come to this class of people. Therefore it is unconstitutional. This thing of love and marriage, of entering into wedlock, is a holy thing. It is a sacred institution, ordained by God Himself. This thing of love is an all powerful, moving and controlling thing, not easily shaken off or thrown aside. And should we men say, "Thou shalt not marry, thou shalt not enter into this holy estate?"

But you raise the question as to whether the welfare of the community is not of more consequence than the happiness of the individual. I grant that it is. But have we not sufficient wisdom and knowledge to accommodate both the welfare of the community and the right to the pursuit of happiness of the individual, and harmonize them both? I believe we have, and that we should at least make the effort. Gentlemen of the medical profession, I think we should say, "Thou shalt and may, with safety to the community and to thyself, enter into this holy estate." I say do it by sterilization. When a tuberculous man or woman comes to you for certificate for marriage, why not say to that man or woman, upon one condition, that of being sterilized. If he and she both accept that condition then the interests of the community are satisfied. It should be a matter entirely with the couple in question as to whether they shall accept that condition and enjoy the rights that the Constitution of this country guarantees to them.

THE PRESENTING SYMPTOMS, FINDINGS AND ULTIMATE DIAGNOSIS IN 500 CONSECUTIVE CASES PRESENTED FOR UTERAL CATHETERIZATION

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and
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The object of this investigation, the results of which we wish to report at this time, was to find out what relationship the symptoms bringing a patient to the urologist bear to the ultimate findings and diagnosis as established by the usual urological procedures.

The clinical material used for this analysis consisted of 500 consecutive cases of our clinic in which the ureters were catheterized in the course of their urologic examination. Naturally, those cases presenting conditions which are contraindications for ureteral catheterization or conditions in which this procedure is unnecessary are not included in the series. Thus, cases showing bladder tumors, prostatic hypertrophy, vesical calculi and other canditions that cause bladder symptoms pri-

marily, and in which the pathology was found in the bladder or genital adnexa, would not fall in this group. The majority of these cases are submitted to observation cystoscopy only.

The presenting symptoms met with were, in order of frequency, pain, frequency of urination, frequent and painful urination, hematuria, chills and fever, tumor, albuminuria and pyuria. Very rarely does a patient come complaining of a single symptom, but almost invariably one symptom is outstanding and is stressed by the patient. Therefore, for the purpose of this analysis we have taken the most outstanding symptom as the chief complaint and have classified the patient accordingly.

Pain above all other symptoms is most frequent, most important to the patient and presents the greatest variation in severity and character. It is almost impossible to make a classification of the various types of pain and for that reason all degrees of severity are classified simply as pain, with the single qualification of location. Pain in the right side does not necessarily mean that the distress was confined to a sharply localized area, because usually there would be associated pain in back, flank and lower abdomen, but the most characteristic localizing feature was that the pain was in the right side.

Frequency of urination comes next to pain as a chief complaint. Frequency usually is the result of some bladder disturbance which latter, in itself, may be the sequel of pathology elsewhere. This may be illustrated by extravesical causes of frequency such as pelvic disorders in women or the cystitis secondary to a renal tuberculosis. Renal calculi rather infrequently cause frequency of urination but ureteral calculi usually do.

There is another type of case whose chief complaint is frequency associated with pain and burning during the act of urination and these cases have been grouped together.

Hematuria, in the sense in which it is used here as the presenting symptom which brought the patient to examination, is painless hematuria unassociated with marked frequency. It must be understood that there were many others in this series showing blood in the urine but this was of secondary importance so far as the patient was concerned.

The cases showing chills and fever as the outstanding feature came under investigation usually because of some clinical findings pointing to the genito-urinary tract and were catheterized with the view of eliminating the kidneys as a causative factor.

The group of which tumor was the chief symptom were referred for urologic participation in the differential diagnosis.

A small number of cases presented themselves with the one symptom of albuminuria or pyuria.

The clinical investigation included a very careful history of the patient and his complaints; then a thorough urological examination was made in each case, including cystoscopy and ureteral catheterization with examination of the bladder urine and catheterized specimens together

with differential renal functional tests; finally, a complete radiographic examination was made in all cases including ureterograms and pyelograms where indicated.

The ultimate diagnosis was made after a complete and thorough analysis of all evidence presented in each individual case. Where several coincident diagnoses were arrived at only the primary or most important diagnosis is used for purpose of classification. There have been no duplications in this report. Where the urological examination was negative no attempt was made to make a diagnosis and these cases were referred to other specialists.

DISCUSSION

Different types of pathology in the genito-urinary tract may present similar symptomatology and it requires all methods of diagnosis to make the differentiation.

An analysis of the cases under any one of our groups arbitrarily classified because of an outstanding symptom will show the wide range of possibilities of cause of that symptom.

One must not expect to find all of the evidence supporting a diagnosis, since an impacted ureteral stone may not show at all in the radiograms yet cystoscopically it may even be seen projecting from the ureteral opening or may be located higher up by presenting an absolute obstruction to the ureteral catheter.

While a fairly accurate provisional diagnosis may be made from the history and clinical features as the case presents itself, if there is one thing this analysis of cases will show, it is the importance of co-ordinating not only the history, the symptoms and the results of the usual direct examination, but also the very important findings which are determined by the laboratory and x-ray examination. We have made so many mistakes in our preliminary diagnoses, due to the failure to properly interpret the evidence as it presents itself, that we wish to emphasize the importance of a complete examination first and then a judicious analysis of the entire findings before a final diagnosis is attempted.

We now present in tabulated form the results of this investigation. Each one may draw his own conclusions as these facts are presented.

TABLE NO. 1

PAIN IN RIGHT SIDE—147 CASES

Urological Negative	37	Cystitis	2
Ureteral Calculus, Rt.	34	Hydronephrosis, Rt.	2
Renal Calculus, Rt.	19	Cholelithiasis	2
Appendicitis	11	Pyelitis, Bilateral	1
Ureteral Stricture	7	Hypernephroma, Rt.	1
Nephroptosis, Rt.	5	Hydropyonephrosis, Rt.	1
Renal Calculi, Bilateral	5	Pyelonephritis, Rt.	1
Pyelitis, Rt.	4	Renal Tuberculosis, Rt.	1
Renal and Ureteral Calculi, Rt.	3	Ureteral Diverticulum, Lt.	1

Perirenal Abscess, Rt.	3	Pleurisy, Rt.	1
Peritoneal Adhesions	3	Tuberculosis, Spine	1
		Tuberculosis, Pulmonary	1

TABLE NO. 2

PAIN IN LEFT SIDE—123 CASES

Ureteral Calculus, Lt.	49	Empyema, Lt.	2
Renal Calculus, Lt.	24	Ureteral Calculi, Bilateral	1
Urological Negative	20	Pyelitis, Bilateral	1
Renal and Ureteral Calculi, Lt.	5	Nephritis, Lt.	1
Renal Calculi, Bilateral	3	Hypernephroma, Lt.	1
Ureteral Stricture, Lt.	3	Hydronephrosis, Lt.	1
Peritoneal Adhesions	3	Hydropyonephrosis, Lt.	1
Cystitis	2	Pyelonephritis, Lt.	1
Pyelitis, Lt.	2	Prostatitis, Chronic	1
Perirenal Abscess, Lt.	2		

TABLE NO. 3

FREQUENCY—99 CASES

Cystitis	54	Urethritis, Non-Specific	2
Urological Negative	13	Ureteral Calculus, Rt.	1
Pyelitis, Bilateral	7	Ureteral Calculus, Lt.	1
Pyelitis, Lt.	2	Renal Calculus, Bilateral	1
Renal Calculus, Rt.	2	Renal Tuberculosis, Bilateral	1
Renal Tuberculosis, Rt.	2	Nephritis	1
Spinal Cord Lesion	2	Ulcer of Bladder	1
Verumontanitis	2	Cerebrospinal Syphilis	1
Seminal Vesiculitis	2	Perineal Lacerations	1
Peritoneal Adhesions	2	Lymphatic Leukemia	1

TABLE NO. 4

PAIN IN BACK—40 CASES

Urological Negative	18	Pyelitis, Rt.	2
Pyelitis, Bilateral	4	Pyelitis, Lt.	1
Renal Calculus, Lt.	3	Renal Calculi, Bilateral	1
Nephritis	3	Tuberculosis, Spine	1
Cystitis	3	Syphilis	1
Ureteral Calculus, Lt.	2	Verumontanitis	1

PAIN IN UPPER ABDOMEN—9 CASES

Cholelithiasis	5	Nephroptosis	1
Nephritis	2	Urological Negative	1

PAIN IN LOWER ABDOMEN—6 CASES

Urological Negative	4	Intra-Abdominal Tumor	1
Pyelitis, Rt.	1		

TABLE NO. 5

FREQUENT AND PAINFUL URINATION—28 CASES

Cystitis	20
Urethral Caruncle	2
Urological Negative	2
Ureteral Calculus, Rt.	1
Renal Calculus, Lt.	1
Verumontanitis	1
Cholelithiasis	1

HEMATURIA—25 CASES

Hematuria, Lt. — Cause Undetermined	7
Hematuria, Rt. — Cause Undetermined	6
Renal Calculus, Rt.	3
Nephritis	3
Hypernephroma, Lt.	2
Hypernephroma, Rt.	1
Ureteral Stricture, Rt.	1
Nephroptosis, Rt.	1
Renal Calculus, Lt.	1

TABLE NO. 6

CHILLS AND FEVER—10 CASES

Urological Negative	3
Pyelitis, Bilateral	2
Pyelitis, Rt.	1
Hydropyonephrosis	1
Nephritis	1
Perirenal Abscess, Rt.	1
Renal Tuberculosis, Rt.	1

TUMOR—9 CASES

Intra-Abdominal Tumor, Rt.	2
Intra-Abdominal Tumor, Lt.	2
Nephroptosis, Rt.	1
Hydronephrosis, Rt.	1
Traumatic Ruptured Kidney, Rt.	1
Multiple Cysts, Kidney, Lt.	1
Cholecystitis, Acute	1

ALBUMINURIA—2 CASES

Nephritis	2

PYURIA—2 CASES

Renal Calculus, Bilateral	1
Cystitis	1

TABLE NO. 7

RENAL ANOMALIES

Renal and Ureteral Anomalies Observed in This Series—7 cases.

Fused or Horseshoe Kidney	1
Complete Duplication of Lt. Ureter	1
Complete Duplication of Rt. Ureter and Pelvis; Double Lt. Pelvis	1
Complete Duplication of Right Ureter	1
Complete Duplication of Rt. Ureter; Saccular Dilatation of one Ureter Containing 10 Stones	1
Complete Duplication Lt. Ureter; Double Pelvis, Lt.	1
Saccular Diverticulum—Lt. Ureter	1

TABLE NO. 8

SUMMARY OF DIAGNOSES—500 CASES

Calculi	162
Urological Negative	98
Cystitis	82
Miscellaneous, General	45
Nephritis	11
Nephroptosis	9
Perirenal Abscess	6
Hypernephroma	5

Pyelitis	28	Renal Tuberculosis	5
Miscellaneous, Urological	16	Hydronephrosis	4
Hematuria, Cause Undetermined	13	Hydropyonephrosis	3
Ureteral Stricture	11	Pyelonephritis	2

DISCUSSION

Dr. L. C. Todd, Charlotte:

I want to mention a few of the pitfalls that we encountered in this group of cases. First, let us consider the reporting of finding pus cells in the urine specimens collected by ureteral catheterization. This is a very important finding but there are altogether too many "laboratorians" who are apparently unable to recognize pus cells and differentiate them from renal epithelium cells. The catheterized specimen very frequently contains a lot of epithelial cells from the pelvis of the kidney and it is difficult to get the proper differentiation from a laboratory technician who has not been thoroughly instructed and who has not had experience on this very point. Of course, these cells should not be reported as pus cells nor do they indicate infection of the kidney.

Another possible cause of difficulty in diagnosis is in collecting a specimen of urine from a kidney which has a large dilated pelvis. The ureteral catheter may drain one of the upper calices and a sample of normal urine be collected, whereas after partial withdrawal of the catheter and subsequent drainage of the lower portion of the pelvis a specimen may be collected which is loaded with pus and bacilli.

Again, in doing renal functional tests where the phthalein excretion of the separate kidneys is used as an indicator of the renal function, one should make certain that the kidney with an enlarged pelvis is thoroughly drained before the dye is started. It is occasionally the fact that the catheter may be partially blocked or bent so that a free flow of urine is not obtained and a fair excretion determination is not possible. Or the catheter may be draining one of the upper calices whereas withdrawal for an inch or two will give a fair sample of urine for estimating the dye output. It is my personal belief that a single differential phthalein test is entirely insufficient as an estimate of the comparative function of the two kidneys. Two or more estimations should be made as checks one on the other. As a single functional test the differential specific gravity of the specimens from the two sides is of more value.

Dr. A. J. Crowell, Charlotte:

These gentlemen have given the facts about this work, so you have everything I could say on the subject. We are now checking up the phthalein in our kidney tests by getting a differential specific gravity. We have been doing this since the College met in Boston last November.

Dr. Fullerton, of Belfast, Ireland, gave an analysis of a large number of cases in his paper, showing the great significance of a low specific gravity of urine coming from one kidney and a high one from the other. In 40 or 50 cases we have studied by this

method since then where the kidney was diseased on one side, as indicated by a low phthalein output, the specific gravity has been low in the same proportion. When both kidneys are diseased, we check up the phthalein output by estimating the nitrogenous retention in the blood. It is well to check up the phthalein by differential specific gravity when considering the removal of a diseased kidney. We feel it is just as wise to check up our Wassermann by this quick and reliable method described by Dr. Todd. The method is both simple and rapid.

Dr. F. L. Siler, Franklin:

I am speaking from the standpoint of the general practitioner. I was interested in what Dr. Todd said about finding pus in the lower calices of the kidney when it would not be found in the upper calices, and it has occurred to me that in the erect posture we would likely have some residual urine in the lower calices. In the very delicate linings of the pelvis of the kidney and its calices this residual urine with such bacteria as might be eliminated by the kidney would, in all probability, have a tendency to cause pyelitis.

Dr. Thompson, closing the discussion:

In closing, I would like to call your attention to the number of cases in which the urological examination was entirely negative. Practically 30% of the cases in this series were negative but the urological examination was a great aid in arriving at a correct diagnosis. It is interesting to know the large variety of urological pathology and renal anomalies.

In reply to Dr. Siler's question regarding the drainage from the upper calices, in cases of hydronephrosis if you pass a ureteral catheter to an upper calix in which there may be no infection or slight infection you may get a negative urine. However, in practically all cases of pyelitis you will find pus in urine from the kidney pelvis.

Dr. Todd (in answer to a question):

I wish to call attention to the fact that in three of our cases we had collected normal samples of urine from the upper portion of the pelvis, and when the catheter was partially withdrawn we got heavy pus from the most dependent portions of the pelvis.

KAHN PRECIPITATION REACTION, WITH DESCRIPTION OF A MICRO-MODIFICATION

Lester C. Todd, M.D.
and
Joseph A. Elliott, M.D.
Charlotte

Ever since the successful advent of the complement fixation test for syphilis there have been innumerable research endeavors by numerous workers to devise a diagnostic method which would be of equal significance and accuracy to the test known as the Wassermann reaction and yet at the same time be less cumbersome and less time consuming.

The great majority of these efforts have been almost fruitless but there has been a progressive evolution along at least one line which has resulted in a method which, although it may still be incomplete, like other products of evolution, still has several valuable features.

In reviewing this subject it appears that there have been at least two chief schools of thought—the one believing that the Wassermann reaction is an antigen-antibody prenomenon in the biological sense; while the other attempts to explain the reaction in the terms of physics and chemistry of colloids. The latter idea is the basis for the course of development which has led to the precipitation reactions. Beginning with the flocculation reactions of Meinicke (1) in 1917 there soon followed the latter modification of Sachs-Georgi (2), Dryer and Ward (3), Wang (4), and more recently in this country the method of Kahn (5).

Several workers have reported their comparative studies of the parallelism of the Wassermann reaction and the Sachs-Georgi test. Those who did a large enough number of comparative tests to make their reports of value report a high percentage of complete agreement. Parker and Haigh (6) report 93% agreement in 520 cases while Levinson and Peterson (7) report 92% agreement in 1,042 cases. The Kahn reaction, a development of the Sachs-Georgi, gives a much higher percentage of agreement. Ide and Smith (8) report the results of this test in 2,165 serums and obtained identical results in all serums giving more than a two plus reaction. Moody (9) reports 98% agreement in 1,500 tests using Herrold's (10) contact modification. Keim and Wile (11) have reported from the clinical standpoint the value of this test in various stages of syphilis.

We now have performed parallel tests with the Kahn and Wassermann in 1,000 cases. There has been complete agreement in all cases showing a strongly positive (four plus) Wassermann reaction at both 37° and 8° fixation. In each case there was a spontaneous precipitation reaction. There was one case which gave a positive precipitation reaction and a negative Wassermann. A repeated Wassermann test in this case was positive and he showed improvement under specific treatment. One case with penile sore gave a four plus precipitation reaction and a one plus Wassermann. There were ten other cases in which there was a discrepancy between the two tests, the Wassermann in these cases being more sensitive. Every one of these cases had had a varying amount of specific treatment. So taking all cases of distinct disagreement there are only 1.2% of cases falling in this group.

TABLE 1

COINCIDENT WASSERMANN AND KAHN

Cases	*Wassermann*	*Kahn*	
786	Negative	Negative	988 Cases agreement
202	Positive	Positive	
10	Positive	Negative	12 Cases or 1.2% disagreement
2	Negative	Positive	
1,000			

There are two chief advantages of the precipitation method, the first of which is the element of time. It is possible to obtain a clear-cut reaction in at least 80% of the positive cases within 10 minutes after the patient's serum has been collected and inactivated, in other words within an hour of collecting the blood specimen. One can readily see the value of this feature in certain cases. As a working rule a final reading after incubation over night is customary. The second advantage is the fact that only two reagents are used instead of five as in the Wassermann test. These reagents are the patient's serum and the antigen. This simplification makes for economy of time and material and the test can be performed any day without the necessity of collecting and titrating the other biological reagents used in the complement fixation test. The major part of the Wassermann test is standardization of the amboceptor, the collection of the complement and its titration and the preparation of the cell suspension. With the precipitation test all of these are done away with.

A brief outline of the test as Kahn has most recently modified it is as follows: The antigen used is an alcoholic extract of heart muscle fortified with 0.4% cholesterin. The patient's serum is collected in the usual way for serologic tests and the inactivated serum is used. Upon combination of the diluted antigen and the serum in the definite proportion of 1:6 with shaking for three minutes, a strongly positive or four plus reaction is indicated by a prompt precipitation or flocculation. A final reading is best made after incubation over night. The more thorough the mixing the more promptly will the flocculation take place. We have found that a special frosted dim light at the bottom of a black cylinder in the top of which the tube is held on a slant for reading is of great aid in determining the amount of precipitation.

POSSIBILITIES OF THE MICRO-TEST

Recognizing the importance of the early diagnosis of primary syphilis as regards treatment and prognosis of the disease, we endeavored to adapt this method to the fluid obtained from the initial sore. The demonstration of spirochaeta pallida in the local lesion has been until recently the only positive method of diagnosis. Frequently these organisms cannot be demonstrated, due either to the fact that the lesion has been treated or that it is complicated by chancroidal infection. In rare instances even repeated examination of the untreated, uncomplicated lesion fails to reveal the organisms. Any method that will aid in establishing a definite diagnosis is worthy of investigation.

Klauder and Kolmer (12a) in 1921 reported their results with the Wassermann test performed on the secretions, transudates and exudates in syphilis. They concluded from their work on chancre fluids that the fluid probably contained a complement fixation antibody and that the local Wassermann test might be a possible aid in differentiating syphilitic from nonsyphilitic lesions. In a later communication (12b) they reported the results of the examination of fluid from 14 cases, twelve of which were positive and two were negative. Stern and Rypins (13) recently reported that they have obtained positive Wassermann reactions on fluids from 34 chancres and negative reactions with two non-specific

cases. They concluded that the local Wassermann reaction is practical and a valuable means of diagnosing primary syphilis. The micro-precipitation test which we wish to describe is equally valuable and accurate and due to its simplicity we feel that it should occupy a place in our diagnostic armamentarium. Kahn mentions the fact that the micro-test is adaptable to the blood serum being valuable when only small amounts of serum are available.

COLLECTION AND PREPARATION OF FLUID

The sore to be examined is cleansed thoroughly with saline solution and then dried. Suction is applied by means of an open-bored glass syringe made by grinding off the tip as described by Gill (14). As suction is applied small beds of fluid appear and coalesce at the base of the ulcer. The fluid is taken up by capillarity into small opsonic pipettes and the process repeated until a sufficient amount of fluid is obtained. At least two pipettes should be filled. The coincident performance of the local Wassermann reaction may also be done if enough fluid is obtained.

The capillary pipettes are then sealed off at both ends in the flame. The sealed capsules are then centrifuged at high speed to throw down the cells and debris. When the raw fluid is used, the air-containing end of a capsule is cut off with a sharp file and then the other end is cut off so as to remove all of the sediment. This leaves the perfectly clear fluid for the test. When an inactivated portion of the fluid is to be used, a sealed capsule after centrifugation is immersed upright in a water bath for 30 minutes at 56°C. After inactivation, the capsule is cut as described and the clear fluid is used in the test.

ANTIGEN

The antigen is prepared and cholesterinized in exact accordance with Kahn's most recent method. It is diluted with saline in the usual proportion of 1:3 and the proportion of one part of antigen to six parts of fluid is maintained.

PERFORMANCE OF THE MICRO-TEST

On account of the relatively small amounts of fluid that are usually available for the test, we resorted to the use of blood-diluting pipettes (white cells) both for measuring the antigen and also for mixing. The contents of the opened capsule are expelled upon a clean microscopic slide. One part of the diluted antigen is taken up in the pipette and deposited upon another slide. Six parts of the serum are taken up with the same pipette and added to the drop of antigen on the slide. The two parts are then mixed as thoroughly as possible by drawing them up and down several times in the pipette and stirring the drop. A portion of the mixed fluid is then deposited by means of the pipette at the center of a clean cover slip which is immediately covered with a deep culture slide previously ringed with vaseline. The slide is then pressed down air-tight and turned over so as not to disturb the drop on the cover slip.

The completed set-up is then placed in the incubator and observations made 4, 18, and 36 hours later. In the positive cases there is a definite clump of floccules plainly visibl to the naked eye at the end of 18 hours. In some cases it was possible to see a heavy precipitate in 4 hours' time or less. Those cases which were positive to the naked eye at the end of 18 hours usually showed a definite microscopic precipitate within a few hours of setting up the test. It is well to set up controls with known positive and negative serums and always a hanging drop of the antigen alone should be prepared to make sure that the antigen itself does not show a precipitate. There is always a small amount of precipitate seen microscopically in the antigen and also in the antigen and negative fluid mixture. This amount may be disregarded in the reading of the unknown.

DISCUSSION OF METHOD

The Micro-Kahn test in our hands has given a definite positive reaction in all cases in which spirochaetes were present in the chancre fluid except one. In that case the lesion had been present for less than 24 hours.

It is important that the antigen and fluid be thoroughly mixed. It appears that the speed of the reaction is dependent upon proper mixing.

The amount of fluid necessary for the test is small, .013 - .028 c.c., and depends upon the individual blood-counting pipettes, as these vary in size of the capillary tube. Less fluid is needed for this test than for the local Wassermann. It can be set up any day without any special inconvenience. A definite reaction may be obtained in those specimens which react strongly anti-complementary in the Wassermann reaction.

Early in the use of the Kahn test on the chancre fluid it was noted that the reacting substance was found very early in the local lesion in the raw fluid but its reacting properties were promptly destroyed by the heat of inactivation. For this reason the raw fluid only should be used. This is contrary to the Kahn method of procedure when using the test with the blood serum, since the blood serum specimens are inactivated before use. We have tested numerous raw blood serums and in some have failed to obtain precipitation reactions, whereas after inactivation portions of these same specimens would give their characteristic reactions parallel with the clinical findings and the Wassermann reaction. Possibly there are at least two substances capable of giving the precipitation reaction—the one found early in the local lesion, which is very thermolabile, while the other is thermostabile and appears in the blood stream later. Or possibly the heat of inactivation is sufficient to destroy all of the reacting substance present in the local lesion early when the amount is small but does not destroy, all of that present in the local fluid later or in the blood serum when the amount present has greatly increased. The fact that heated serum has often a more powerful flocculating reaction than raw serum appears to be due to heat diminishing or destroying the anti-flocculant action of the otherwise inactive globulin as shown by Mackie (15).

Coincident with a positive Kahn on the inactivated blood serum there is a positive reaction in the inactivated fluid from the local sore. This reacting substance appears in the blood stream at about the same time as the appearance of the positive Wassermann upon the blood.

We have now examined 39 cases in which the Micro-Kahn was performed upon the local fluid—20 chancres, 11 chancroids, 6 cases of ulcus mixte, one of scabies, and one of herpes progenitalis.

TABLE 2

Clinical Diagnosis.		*Dark Field. Positive.*	*Micro-Kahn Positive.*	REMARKS
Chancres	20	15	19	1 case lesion 12 hours old. Dark field plus. Kahn negative.
Chancroid	11	0	2	One treated luetic. One error?
Ulcus Mixte	6	2	4	The two cases with negative Micro-Kahn without treatment remained negative for lues for a period of 2—3 months.
Scabies	1	0	0	
Herpes	1	0	0	

The local Wassermann was performed in those cases in which sufficient fluid could be collected, and except that the Wassermann was occasionally anti-complementary and furthermore did not give as strong or as clearcut a positive as the Micro-Kahn the two tests checked up closely.

CONCLUSIONS

1. The Kahn test and the Wasserman test were done coincidently on the blood serum in 1,000 cases. There was agreement between the two tests in all except 12 cases or 1.2%.

2. The test is adapable to the early diagnosis of syphilis by means of a micro-modification which is herein described.

3. The substance reacting in the precipitation test appears very early in the local lesion and is present before the blood becomes positive in the Kahn and in the Wassermann.

4. The Micro-Kahn in no way should be used as a substitute for the dark field, but is of especial value where the dark field examination is negative.

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DISCUSSION

Dr. A. J. Crowell, Charlotte:

There are just two points I wish to emphasize: First, the simplicity and rapidity by which you can make this test and arrive at a diagnosis of syphilis; and, second, the importance of checking up the Wassermann reaction. It makes no difference how careful a person may be, it is always well to have a double check on any work done. This gives an excellent check on the Wassermann.

Dr. Reuben McBrayer, Sanatorium:

I rise just to speak a word of praise. We go to the meetings of the American Medical Association, or see something come out from Kolmer's laboratory, and praise it very highly. I want to thank Dr. Todd and his workers for doing this kind of work. It is just as good a piece of work as Kolmer or any other man in America or Europe can do.

Dr. F. D. Worthington, Charlotte:

I had the pleasure of talking with Dr. Todd about this work very recently. One of the reasons why I am interested in any new test for syphilis, although I see very little of it in the primary stage, is the general attitude of a good many men on the subject. They fix in their minds the idea that the patient has syphilis, or that he has not syphilis, and then accept only the evidence which bears out their preconceived ideas, rejecting all of the evidence that is opposed to it. I worked under a physician on one occasion who had a patient whom he suspected of having syphilis, yet an ordinary blood Wassermann was negative. He tried every reaction that he could possibly get, and they were negative. Still, when that patient came to an autopsy there were indications of syphilis. That is an extreme instance, but it bears out the idea that a great many syphilographers make up their minds that the man has syphilis. Now, I am very sure, from my intimate knowledge of Dr. Todd, that he is not of that opinion, that if he finds the blood Wassermann negative he accepts it. As has been thoroughly pointed out, the early period at which you can get the positive finding is the extremely important thing to the patient, and I am glad that Dr. Todd emphasizes the fact that this is not a substitute for a dark field. In a great many of these treated sores, when it is such an important thing to the patient to find out if he has syphilis, so as to commence vigorous treatment at the time, and the only time, when he has a fifty per cent chance of being really cured, this is a valuable adjunct to our diagnostic methods.

Two cases that I have observed illustrate the danger of accepting one negative report. One was a case of tabes which was very marked. The man who overlooked this condition would have undoubedly made his diagnosis if there had been no such thing as the Wasserman reaction. He sent the blood to the laboratory and then, the report being negative, dismissed syphilis entirely from his mind. Another case was one of acute gonorrhea. A specimen was taken and sent to the laboratory, and because it was negative he told his patient that he had not gonorrhea. His wife became infected and there was trouble all around. I think the laboratory is not, in any sense, a substitute for the clinician. If the evidence is found very conflicting he should be sure that he gets repeated examinations, to see where the possible mistake might have been made.

Dr. Todd, closing the discussion:

I wish to thank the gentlemen for their liberal discussion and I also wish to emphasize again the original test. This adaptation that we have presented here is merely given you for what it is worth. In our work,

at least, we believe it is of value. It checks up closely with the Wassermann. This is especially true with the original Kahn technic when the blood serum is used in the test, and I know of no other two laboratory procedures which run so closely parallel.

I would like to correct a misunderstanding in regard to the time of reading this micro-test. Usually one can read it most satisfactorily after incubation over night. The gross test when used on the blood serum may be read immediately after the set-up, as most of the definite positives will show a spontaneous flocculation, but a final reading should be made after an over-night incubation.

NORTH CAROLINA'S UNIVERSITY EXTENSION POSTGRADUATE COURSES IN MEDICINE

Frederick R. Taylor, B.S., M.D., High Point

Once in a while some individual or some organization inaugurates a new line of work of conspicuous value that arouses the interest of the leaders of thought everywhere, who, following in the footsteps of the originators, develop the work until it becomes an integral part of the world's activity, and then we wonder how we ever got along without it.

We can hardly conceive of a country without schools, colleges, and universities; and postgraduate education is taken for granted as indispensable in certain kinds of work. Its value in medicine has long been recognized, but it has been largely limited to a small favored class of practitioners, who are financially able to bear the expense of travel to distant centers and of more or less prolonged absence from practice, and who are sufficiently progressive to avail themselves of such opportunities. The majority of physicians and their patients have been without any very direct influence of systematic postgraduate medical training, and it remained for our State Board of Health and the University of North Carolina, working together, to inaugurate a plan of University Extension postgraduate teaching in medicine that can be brought to almost every physician in the State.

Already this has attracted the attention of great leaders in medical teaching like Dr. Henry A. Christian, Professor of Medicine at Harvard. Some time ago he asked me to write a letter explaining this work which he could put in the Boston Medical and Surgical Journal, as he thought the physicians of Massachusetts would be interested to hear about it. This letter was published in the September 7th issue of that Journal, and I have freely drawn from it in writing the present paper. I was originally asked to read that letter here, but since then Prof. Chester D. Snell, of the University, has very kindly furnished me with tables of statistics based on replies to questionnaires sent out by the University to physicians who had completed the courses of work, requesting opinions of the work, suggestions for the future, etc., which have given enough new material to take up the subject from a somewhat different angle. He also sent a copy of a recent paper regarding this work written by Dr. F. D. Adams, and a clipping from the News and Observer announcing the courses proposed for next summer, for which I am grateful.

The essential principle of the extension work is to make possible more widespread postgraduate medical education by sending the instructor to the practitioners, thereby giving the instruction at nominal cost without loss of time from practice. Thirty dollars per student has been the charge for the entire course, so this puts it within the reach of practically everyone. In addition, the University has actually given a small rebate to the students after all expenses have been paid, showing an extraordinarily efficient, economic administration of the work. A minimum number of students, I think fifteen, must be guaranteed before a class will be held in a given community. All financial matters are handled at the beginning of the first lecture by a special representative of the University who introduces the instructor and starts off the work.

Besides its amazing economy, this system has other peculiar advantages. The clinical demonstrations are given on diseases and conditions existing in our own communities, and the problems of our everyday work are thus elucidated. This is no small matter. A doctor in a small town may go to some great clinic and feel that the methods of examination and diagnosis in use there are impractical at home. Under the extension system he sees modern diagnostic procedures applied in his own community, with a limited material equipment, and, perhaps quite as important, *the patients see them and learn to appreciate careful systematic examination.* This raises the whole standard of medical practice in that territory.

Probably the greatest disadvantage of this system is, as Dr. Adams brought out in his recent paper, the fact that the members of the class vary widely in age, training, experience, and special interests, so that some instruction badly needed by some members is time wasted on others.

The first work of this kind was done in 1916. The subject chosen was pediatrics, the branch of medicine in which we most needed postgraduate education. Two instructors were obtained: Dr. Lewis Webb Hill, of Harvard, for eastern North Carolina, and Dr. Jesse Robert Gerstley, of Northwestern, for the piedmont circuit. The subjects given to our group were as follows:

Milk.
Digestion of Milk.
The Modern Conception of Disturbances of Nutrition.
Failure to Gain.
The States of Dyspepsia and Intoxication.
Decomposition.
Parenteral and Enteral Infections as Factors in the Causation of Disturbances of Nutrition.
Artificial Feeding of the Normal Infant.
Breast Feeding.
Disturbances Arising in the Breast-Fed.
Acute Anterior Poliomyelitis.
Obscure Causes of Fever.
Convulsions.

I believe that this work caused a very striking reduction in infant mortality from diarrheal diseases in our section, and I am sure that since 1916 I have seen far fewer cases of alimentary intoxication, decomposition, and dysentery in babies than I saw previous to that time, and the infantile diarrheal disturbances that we have had since then have been of a much milder type, on the average. Dr. C. S. Grayson, of our town, who has a large pediatric practice, shares this view, and Dr. D. A. Stanton, when asked if he thought the course in pediatrics profitable, replied that he considered it worth a million dollars to High Point and vicinity.

The War interrupted this work until last year, when it was resumed, and two courses in internal medicine were offered; Dr. Frank A. Chapman, of Rush Medical College, taking the eastern circuit, and Dr. F. Dennette Adams, of Harvard, having our circuit. Dr. Adams lectured on the following topics:

Lobar Pneumonia.
Chronic Lung Diseases Other Than Tuberculosis.
Epidemic Encephalitis.
Endocarditis.
Angina Pectoris and Aoritis.
Irregularities of the Heart.
Peptic Ulcer and Gastric Cancer.
Constipation and the Visceroptosis Syndrome.
Nephritis and Diabetes.
Diseases of the Blood.
Endocrine Disturbances.
The Complications of Lobar Pneumonia, with Special Reference to Empyema.

The University has shown wisdom, I believe, in selecting for teachers young, able men hailing from a considerable distance. A young man of ability is far better than an older man of mediocrity. It removes all suspicion of self-interest if the instructor comes from a locality too far away to attract many patients from the section in which he is teaching. There are also certain obvious educational advantages to both instructor and students in teaching in a distant field. Both get a new viewpoint. The instructor may have a chance to study some diseases that are rare in his own community. A northern physician will probably see more pellagra and hookworm disease here than at home, even though both these diseases are far less common in our State than they once were. In some parts of eastern North Carolina there are exceptional opportunities to study malaria, though this disease is rapidly decreasing, too. The relation of teacher and student is always a reciprocal one, and there is no better way to learn than to teach.

"But there is neither East nor West, border, nor breed nor birth,
When two strong men stand face to face, tho' they come from the ends of the earth,"

and no two earnest, conscientious physicians can get together and work on a common problem without both deriving benefit from their contact,

no matter what their differences in training, opportunities, methods, or environment.

In addition to pediatrics and internal medicine, therapeutics is a field in which we need postgraduate instruction; not so much what to give, perhaps, as what not to give, and a study of the action of drugs. We are incessantly bombarded with literature from all quarters of the earth, advertising all manner of so-called "ethical proprietaries," very many of which are neither ethical nor can they be used with propriety, but fortunate is he who can stand against the continuous summation of stimuli urging him to use the so-called "latest scientific discoveries" in the treatment of all human ills, unless he has a balance wheel in an opportunity to obtain really scientific postgraduate therapeutic instruction. A firm foundation in chemistry and pharmacology will save him from much error along this line, but these sciences are advancing so rapidly that the man outside of their special domains finds it very difficult to keep up with recent developments. Further help can be obtained from that much abused but invaluable organization, the Council on Pharmacy and Chemistry of the American Medical Association, but nothing can equal personal contact between instructor and class.

Elementary neuropsychiatric work is another subject in which there is crying need for more knowledge among the profession as a whole, and I hope some day to see this subject brought to us.

Enough of this personal viewpoint. Let us see what is the general feeling regarding this work among those who took the various courses.

The University sent out the following questionnaire to each student after the courses were completed:

1. Where did you attend the course?

2. Were the lectures excellent, good, fair, passable, or poor?

3. Were the clinics excellent, good, fair, passable, or poor?

4. Did you or did you not get the worth of your money and time out of the course?

5. What part or characteristic of the course do you consider the most valuable?

6. If a course in therapeutics were offered next summer by a competent instructor under the same plan, would you take it?

7. Would you take an advanced course in pediatrics if given by either Dr. Gerstley or Dr. Hill, who were the instructors in 1916?

8. What other subject would you like to take? ?

9. What suggestions have you to offer for the improvement of this plan of postgraduate medical work?

The consolidated total statistics from the replies to this questionnaire are here presented. They come from all the towns in which courses have been given, viz., Durham, Selma, Goldsboro, Wilson, Rocky

Mount, Tarboro, Asheboro, Greensboro, High Point, Lexington, Salisbury, and Charlotte.

	1916.	1922.
Total Membership	169	199
Total Number Replying to Questionnaires	122 or 72.1%	154 or 77.3%
Per Cent of Attendance	76.0	84.2 Western Circuit. No Record, Eastern Circuit.

Were the Lectures and Clinics excellent, good, fair, passable, or poor?

	Lectures.		*Clinics.*	
	1916.	1922.	1916.	1922.
Excellent	52%	53.3%	25%	19.0%
Good	42%	37.5%	42%	48.5%
Fair	4%	8.5%	21%	20.5%
Passable	1%		3.5%	5.6%
Poor		0.6%	4.5%	6.3%

Did you or did you not get the worth of your money and time out of the course?

	Yes.	*No.*	*Indefinite.*
1916	107	8	7
1922	130	10	3

What part or characteristic of the course do you consider the most valuable?

1922 only: 11 replied all of it; 21 said clinics; 17 lectures; 3 were indefinite; 8 gave miscellaneous replies, including lung diseases, diseases of the heart, chest work, incentive to do better work, review, diabetes, thorough examination, painstaking diagnosis, instructor, discussion, stimulation to study, first half, physical diagnosis, modern thoughts, and lectures on pneumonia.

If a course in Therapeutics were offered next summer by a competent instructor under the same plan, would you take it?

1022 only: Yes, 109; No, 11; Indefinite, 31.

Would you take an advanced course in Pediatrics if given by either Dr. Gerstley or Dr. Hill, who were the instructors in 1916?

1922 only: Yes, 109; No, 11; Indefinite, 31.

What other subject would you like to take?

31 replied internal medicine; 9 voted for obstetrics; 6 for genito-urinary diseases; 5 each for surgery and gynecology; 4 each for nervous diseases and endocrinology; 3 each for gastrointestinal diseases, skin diseases, and laboratory work; 2 each for surgical diagnosis, tuberculosis, and microscopic work; and there was one request for each of the following: medical ethics, chest work, x-ray, eye, ear, nose, and throat, nose and throat, pathology, and public health.

What suggestions have you to offer for the improvement of this plan of medical work??

Ten men said to get the best instructor possible, with plenty of experience, regardless of cost.

Seven suggested more and better clinics.

Seven suggested that the history, physical diagnosis, and laboratory findings should be worked up beforehand on clinic patients.

Three said to develop better clinics, and three others suggested that the lecturer's notes should be printed, with blank pages for extra notes.

Two each made the following suggestions: Have Dr. Adams again; have Dr. Chapman again; have longer class periods; try to interest a larger number of physicians in the work; have fewer subjects and cover them more thoroughly; get larger classes; have the local doctors furnish more clinical material.

One each suggested the following: Require stricter attendance; give quizzes; have the instructor use more demonstrations; have the daily press stress some of the best features brought out for the laity's benefit; announce subject one week ahead so clinical material can be furnished for that subject; charge from one to five dollars for being absent and use money for an occasional feed and call in an outside speaker; spend less time on the heart and more on the liver; run the courses for six or nine months each year; have more than one lecturer; get the whole membership of the county medical societies to join; begin earlier in the summer; have occasional joint meetings at night of several groups at a central point; assign some members to discuss each subject; have the meetings start and end on time; have the clinics in connection with hospitals if possible, and have some member responsible for the clinics.

So much for the statistics. Many of the suggestions made are helpful, some have already been carried out in some of the groups, such as announcing the subjects a week ahead of time, and a few are probably impractical to apply at present. The suggestion to get the best instructor possible, with plenty of experience, might seem to imply a detrimental lack of experience on the part of those instructors we have had in the past. If any such implication exists, I cannot avoid taking issue with it. In the first place, a man of very long experience and real teaching ability, is usually kept so busy at home that he is hardly likely to spend any of his spare time in more teaching, as he will need it for rest and recreation. Then, too, what constitutes experience? Osler has stated that the man who has carefully studied eight cases of pneumonia knows more about pneumonia than the man who has carelessly treated 500 cases, and on our circuit last year we had in Dr. Adams a man who had *carefully studied* more nearly the 500 cases than the eight cases, and who is recognized in Boston as an authority on pneumonia. When I was there last fall, I asked a number of men if they knew Dr. Adams, and they would almost invariably reply, "Do you mean the pneumonia man at the City Hospital?" I have not had the pleasure of hearing Dr. Chapman, but from all I can learn he, too, did very fine work on his circuit. Perhaps,

however, those who asked for more experience referred rather to teaching than to clinical experience. Of course, long teaching experience, if it can be obtained in a first-class man, is valuable, yet I cannot feel that this work has suffered any from the lack of it. Too long experience in teaching undergraduates might make it difficult for a man to adapt himself to the graduate viewpoint, and there may even be other possible disadvantages. Again listen to the words of Osler in his address, "Teacher and Student," given at the University of Minnesota in 1892. He says: "From one who, like themselves, has passed *la crise de quarante ans,* the seniors present will pardon a few plain remarks upon the disadvantages to a school of having too many men of mature, not to say riper, years. Insensibly, in the fifth and sixth decades, there begins to creep over most of us a change, noted physically among other ways by the silvering of the hair and that lessening of elasticity which impels a man to open rather than to vault a five-barred gate. It comes to all sooner or later; to some it is only too painfully evident, to others it comes unconsciously, with no pace perceived. And with most of us this physical change has its mental equivalent, not necessarily accompanied by loss of the powers of application or of judgment; on the contrary, often the mind grows clearer and the memory more retentive, but the change is seen in a weakened recepitvity and in an inability to adapt oneself to an altered intellectual environment. It is this loss in mental elasticity which makes men over forty so slow to receive new truths. Harvey complained in his day that few men above this critical age seemed able to accept the doctrine of the circulation of the blood, and in our own time it is interesting to note how the theory of the bacterial origin of certain diseases has had, as other truths, to grow to acceptance with the generation in which it was announced. The only safeguard in the teacher against this lamentable condition is to live in, and with, the third decade, in company with the younger, more receptive, and progressive minds. . . . .

"As we travel farther from the East, our salvation lies in keeping our faces toward the rising sun, and in letting the fates drag us, like Cacus his oxen, backward into the cave of oblivion."—From "Aequanimitas and Other Addresses," Blakiston, Phila.)

Elsewhere this same master teacher condenses this whole idea into the terse exhortation to the older men to "walk with the boys."

What of the future of this work? To me it seems indeed bright. For this year three circuits are planned, as follows:

1. Western Circuit: Waynesville, Asheville, Rutherfordton, Morganton, Hickory, and Statesville. Instructor, Dr. Frank A. Chapman, of Chicago.

2. Southern Circuit: Raleigh, Sanford, Southern Pines, Hamlet, Lumberton, and Fayetteville. Instructor, Dr. F. Dennette Adams, of Washington, D. C.

3. Eastern Circuit: Kinston, New Bern, Washington, Plymouth, Williamston, and Greenville. Instructor, Dr. C. S. Burwell, Director of the Outpatient Department of the Johns Hopkins Hospital.

The course on all three circuits will be on internal medicine, with special emphasis on physical diagnosis.

Since writing this paper, Professor Snell has sent me a copy of a paper that he is to read before the National University Extension Association at St. Louis the last of this week. This will give widespread knowledge of this work, and it does not seem unreasonable to hope to see it develop more each year, until it covers not only our whole state, but the entire nation, and becomes a recognized major feature of American medicine, so that membership in these classes will be considered as much a part of the duty of a good practitioner of medicine, who is located at any considerable distance from a teaching center as is membership in his county medical society.

In closing, I simply want to express a deep sense of gratitude to the University of North Carolina and the State Board of Health for giving us this work. I believe that in promulgating and fostering these extension postgraduate courses in medicine they have done a great thing, and have made a unique and brilliant contribution to medical education that is one of the most valuable things that have been done in the history of medical teaching, in its far-reaching benefit to the medical profession and the public.

DISCUSSION

Dr. F. D. Worthington, Charlotte:

One of our best men took that course last year, and when I asked him what he thought of it, he said it was worth all it cost, but that next year he would rather have a hundred dollar course.

Dr. D. Heath Nisbet, Charlotte:

I took that course last year, and I want to say to you that I was perfectly satisfied in every respect. I think a hundred dollar man could not have been better. This one certainly covered the subject in every way.

Dr. H. H. Newman, Salisbury:

I was away from Salisbury last year at the time the postgraduate clinic was held. Upon returning I found the men greatly interested and highly enthusiastic concerning this work. The need for this instruction was made so emphatic that the group of men have met weekly since, using the Cabot Clinics for material. I believe better diagnoses are made in Salisbury as a result of this postgraduate instruction, and I heartily endorse this great work.

Dr. Taylor, closing the discussion:

In closing this discussion, I would say, in regard to the man who suggests a $100 course, that even assuming we could get more than three times as much out of it, it seems to me that the value of this course is that it can reach so many people. I feel that to increase the cost of it very materially would also very materially decrease the value of the

course to the general profession. Those who can afford to pay a higher price can go away and get their knowledge in any place they want to, but it is the man of small income who wants to avail himself of it, and whom it will aid materially.

THE ROLE OF THE ENDOCRINE GLANDS IN ORGANOTHERAPY

H. B. Weaver, M.D., Asheville

At the annual meeting of the State Medical Society in 1911 the writer had the temerity to read a paper on some of the physiological functions of the internal secretions of a number of the ductless glands. At that date literature on the subject was very meager and no textbook of physiology had given any definite knowledge concerning the manner in which these glands elaborate their secretions or the nature of their functional relation with each other. Indeed there was no textbook in English systematically covering the practical side of this subject until 1914. Today there are some sixty books devoted to the elucidations of the problems connected with the physiology and pathology of the ductless glands and their correlation in the regulation and maintenance of the normal functions of the body, and the therapeutic uses of the glandular products in the treatment of diseases.

Since the days of Hippocrates and Galen down to Brown-Séquard, the "Sponsor of scientific organotherapy," the glandular products of animals have been used and discarded and re-used again; and at no time in the history of medicine has medical thought been more interested in research work and alive to the vital results attaching to the subject, both theoretically and practically, than at the present time. We are now at a stage when the anatomy and physiology of the endocrine glands are being studied as never before, and if we are to possess an intelligent grasp of the coming therapy it is all-important that we master the new terminology that has lately sprung up in order that we may follow the new developments in organotherapy. In fact, I opine that the time is not far distant when endocrinology will develop into a specialty in internal medicine. It would apper, then, all-important that we should hark back to the essential fundamentals—the basic principles which underlie organotherapy.

The endocrines are those glands which "*secrete within.*" That is, they have no excretory ducts; their products go directly into the blood. In a broad sense, we have now learned that certain ductless glands manufacture certain specific internal secretions, all-powerful in the maintenance of health, and that it has been shown that these secretions owe their power to *definite chemical* substances produced through the activity of the gland cells. Starling and Zuelzer in their works on metabolism have demonstrated long ago the correlation of these chemical substances in the production within the blood plasmas of certain definite products or "Hormones." The word "hormone" is of Greek origin and means "I stimulate; I arouse; I set in motion." In a general sense a hormone is a definite chemical substance, a crystalloid in character, free from albumin elaborated in the animal body, which when reaching an

organ through the blood stream stimulates or inhibits the activity of that other organ. The significance of these hormones lies in their dynamic influence on living cells. One hormone or a group of related hormones has one kind of action; a different hormone a different action. The inherent difficulties in endocrinology depend on the fact that the hormones produce more than one effect, and our present limited knowledge will not allow us to correctly interpret these effects and their combinations and interactions.

The endocrines act automatically, independent of the will; and therefore, having under their control the sympathetic system, can automatically produce these "chemical messengers or chemical reflexes" which, by way of the blood stream, *mediate* special functional relations between distant organs. That this *new chemical* theory controverts and supplants the old nervous theory has been demonstrated over and over again by such men as Dorhn, Straling, Sargeant, and Bandler, and is beyond controversy. In recounting, therefore, the role the endocrines play in the equilibrium of the body functions, and also in describing the therapeutic indications and uses of the glandular extracts, we have time to refer only to those organs whose actions are best understood, namely: The adrenals, the thyroid glands, including the parathyroid; the pituitary body, the ovaries; the gonads, and the pancreas and liver. The last two, while having execretory ducts, have also an endocrine action. The less well-known hormones, about thirty-six in number, which possess endocrine functions cannot for want of time be discussed in this paper.

Apart, therefore, from any specific aid in the clinical care of individual cases, the study of the endocrines offers at once the valuable, everready and necessary reminder, that we cannot intelligently and successfully treat a patient save as we consider the body as a unit, not a disease, but a body suffering *with* a disease. We owe a great deal to Crile for emphasizing the elemental fact of the interdependence of all the parts of the hormone organism, a fact which finds its best illustrations in the endocrine phenomena.

With the exception of the liver and pancreas, which are ennervated by the vagus, all the other endocrines in their inter-relations are regulated by and through the sympathetic system. Hence we speak of the vagotonic and sympathetitonic. The vegetative or sympathetic system is the stimulator system, while the vagal is the inhibitor system. These are antagonistic, as proven by pharmacologic remedies. The sympathetic contracts, while the latter dilates musculature.

With reference to the general effects of the endocrines upon growth and development of the body, metabolism, distribution of fat, sexual development, blood pressure, nervous energy, temperament and emotions, it would seem to be of practical value to classify the glands into two opposed groups:

First: The Accelerator Group:

(a) Thyroid; (b) Posterior lobe of hypophysis; (c) Adrenal medullary; (d) Sex glands.

Second: The Retarding Group:

(a) Parathyroid; (b) Anterior lobe; (c) Adrenal cortex; (d) Interstitial glands; (e) The insular parts of the pancreas; (f) Thymus and pineal glands.

The first group stimulate the sympathetic; the second inhibit it.

As a generalization of the functions of the opposed groups, physiology has not as yet specifically defined the antagonism between these groups, but as regards the particular relationship existing between glands and their combined action in functional activity the following seems fairly well established.

The thyroid has a general acceleratory influence on all cell metabolism. It has associated action with the gonads, the anterior pituitary, adrenals and the pancreas. With the ovaries its functional relations are very close and marked; in fact, the thyroid and the ovaries are considered formative glands, as indicated by hypertrophy after puberty, at menstruation and pregnancy, and by degenerative changes and atrophy after thyroidectomy, and at the menopause. The relation of the thyroid to the pancreas is one of inhibition. Its connection with the adrenals is shown by experimental injections of adrenalin developing action currents through the sympathetic in stimulation of the adrenals. The pituitary (anterior lobe) has general influence on growth and carbohydrate metabolism. It has associated action with the thyroid, gonads, adrenals and insular parts of the pancreas. The posterior lobe is associated with the synergistic action of the adrenals on unstriped muscles, glandular tissue, and blood-pressure. The functional relationship between the thyroid, pituitary, adrenals, pancres and liver are evidenced by carbohydrate metabolism. The pancres, however, is antagonistic to the rest of this group. Falta classifies the relations as follows: "The pancreas inhibits the action of the thyroid and adrenals; the adrenals inhibit the pancreas and stimulate the thyroid; the thyroid inhibits the pancreas and stimulates the adrenals."

The adrenals: The medullary substance (adrenalin) is stimulant to the sympathetic system, preserving the tonus of the organs innervated by it. It maintains the sugar content of the blood; it is concerned with blood-pressure; it increases the excitability of striated muscles; it relaxes the stomach and intestines; it contracts the pyloric and ileocecal sphincter and the sphincter of the anus.

If excessive secretion of the cortex is maintained the emotions of anger and hate are shown; if deficient, a state of fear and terror is produced.

The gonads: Active ingrowth and development of secondary sex characteristics. They have associated action with the adrenals, pituitary, thyroid and thymus. With the thymus this mutual relationship is antagonistic. When puberty occurs there is physiological hypertrophy of the glands and involution of the thymus. The gonads are considered as single internal secretory organs; however they comprise both Leydig's cells and the spermatogenic cells. Between these two there is a func-

tional antagonism which involves the principle of Steinach's operation, which is not a transplantation of sex glands, but consists of the atrophy of the excretory duct of the spermatogenic apparatus of the testes and a consequent increase of the hormone-bearing interstitial tissue.

Ovaries: The ovaries produce two distinct internal secretions; one from the corpora lutea, the other from intestinal cells. The differential value of these hormones is difficult to define, but the luteal hormone is chiefly concerned in the production of menstruation and the growth of the sex organs, while, on the other hand, the stromal hormone is chiefly concerned in the regulation of the uterus. The fact that the ovaries' internal secretions are so intimately connected with other glands, notably the thyroid and pituitary, makes it difficult to arrive at the results of ovarian dysfunction, since the symptoms may not be ovarian but may be due to other pluriglandular manifestations which are not of ovarian origin at all. The thyroid is so intimately associated with the ovary that one cannot be affected without affecting the other. The thyroid is typically a female gland, entering constantly into a woman's sexual life. Menstruation cannot possibly occur without the activity of the thyroid. Too much thyroid may cause profuse or too frequent or prolonged menstruation. The thyroid secretes at each menstrual epoch and during pregnancy, and too little or too much activity causes great disturbances at the menopause. All through female life ovarian and uterine functions cannot occur without normal thyroid function. Another relationship: ovasian hormone stimulates the thyroid, and at the change of life the absence of ovarian stimulation may cause thyroid insufficiency, with the result that the woman adds fat and becomes sleepy, apathetic and melancholic.

As we have said, the nervous vegetative system, or autonomic nervous system, is a system which possesses gangiia, and the structures it innervates are not subject to voluntary control. Its center is on the floor of the fourth ventricle, most probably connected with the anterior pituitary gland, which is very vascular in its relations and has many nerve-fibers connected with the sympathetic system. The fibers of the sympathetic are widely distributed through the body. The relations of the neurons in the sympathetic division of the autonomic system seem to be devised for widespread nervous impulses. They dilate the pupils; stimulate the heart; carry impulses to the small arteries and arterioles of the skin, to the abdominal viscera and to the genitourinary tract; they innervate the musculature of the genitourinary tract; they affect the liver; they cause pain, fear, rage, and produce intense excitement; keep tonus in the vessel walls; preserve and raise the blood-pressure. All are manifestations of the sympathetic system. Hence these varied and various manifestations of nervous impulses originate in and are under control of the endocrine hormones, which, by their chemical action, excite and stimulate distant organs in their correlations in the maintenance of metabolism and normal bodily relations.

At the same time vagal regulation comes into play from the cranial division of the autonomic, which retards and sedates the overburdened and exhausted system.

On the pathological side of the question, all the imbalance and aberrations of the endocrine system are caused by overactivity or underactivity of some or all of the endocrines.

The fundamental principles upon which organotherapy rests are grouped under four principal heads: (1) Substitution; (2) Homostimulation; (3) Empirical; (4) Specific.

1. The substitutive extracts supply a deficient physiological secretion of organs that correspond to those glands from which the extracts are made; for instance, thyroid extract in the treatment of cretinism and myxedema.

2. The homostimulative extracts have a definite dynamic action on the glands which correspond to those from which they are taken and whose function is below par or out of harmony with other correlative glands, but not entirely lost; for illustration, ovarian substance in ovarian dysfunction in various disorders.

3. Organotherapy is employed empirically in certain manifestations of dysfunction of certain glands without any definite scientific basis, but, as Barker says, "The clinic is the crucial test." Examples are pituitary treatment in ovarian dysfunction and parathyroid treatment in paralysis agitans.

4. The specificity of organotherapy is wonderfully proven in the physiological action of liquid hypophysis on unstriated muscle, as in action on the uterus in obstetrics or in intestinal stasis in post-operative paralysis, in surgery.

The time limit for this paper will not permit me to enter into detail as to the pluriglandular relations of different organs, but suffice it to say that the experience of hundreds of clinicians the world over maintains the superiority of the pluriglandular theory to the uniglandular theory in the treatment of diseases of endocrine origin.

Broadly speaking, therefore, it is only when we can intelligently interpret the various manifestations of dysfunction and imbalance of the endocrines through and by signs and symptoms that we shall arrive at a correct diagnosis and hence successfully apply therapeutic remedies in hormone therapy. The world of pathologic phenomena is nothing but an endless series of the most different and unusual combinations of physiological experiments which nature and life institute, and which could scarcely be called into existence by the technical resources at our command. Clinical observation will always remain a rich mine of physiological facts.

In closing, let me repeat the idea of the immortal Osler in his prophetic words: "The surgeons have had their innings. Now it remains for the internists to come to the bat, and with the dynamic force of the internal secretions we shall revolutionize the practice of medicine."

The fundamentals in organotherapy are these: The gonads and ovaries do not only enter into and determine the secondary sex charac-

teristics, but they enter into the deeper and primary principles of life. Both are interstitial glands. They are the original primordial cells of the animal species. Among the earliest type of unicellular organisms, Orrendoff tells us, cell division goes on and on *ad infinitum*. The ameba is a type, and its fusion goes on to a new series of division. The ameba never dies. It may be destroyed by its enemies, but it knows no physiological death.

In the higher organisms, the cells which approach nearest to the primary type of cells are the connective tissue cells, which are the most universal. There are, therefore, two elementary cellular structures in the human organism: the glandular cells and the connective tissue cells. These are antagonistic, and are ever at war with each other.

It is said that "So soon as man is born he begins to die." Life, the function of all the organs, is dependent upon the activity of the glandular system. The study of the histology of old age teaches that the connective tissue cells invade more and more the structures of vital organs, producing sclerosis, a phenomenon seen alike too often in the brain, the bones, the arteries, the liver and the kidneys. The sclerotic syndrome is the pariah of diseases. Hence it is only when we can intelligently interpret the various manifestations of the dysfunctions and imbalance of the endocrine system which produce these results that we shall arrive at a successful application of therapeutic remedies in hormone therapy.

There is one set of glandular tissue which supplies a marvelously stimulating energy to all the cells of the body. Leydig's cells and the interstitial cells of the ovaries manufacture a chemical hormone which stimulates the vital energy of every cell and tissue of the body, thereby increasing the resistance to the invasion of the connective tissue, which portends the inevitable oncoming of old age and decay, the destiny of humanity. Hence, as we discern the beginning of this condition, as in arteriosclerosis, we should resort to dietetic and hormone therapy in our treatment.

Bandler says: "Endocrinology is making such vast and rapid strides that is promises to overthrow entirely many of the older notions of physiology and pathology in our textbooks. . . . . New things are always treated with skepticism, but each thinking physician may observe in his practice abundant material for research. By working together we may soon prove beyond doubt that, while heredity shapes our ends, there is an endocrinity that runs parallel."

DISCUSSION

Dr. A. Y. Linville, Winston-Salem:

I reckon many of you have never seen me on my feet before, but I rise now to thank Dr. Weaver for that paper. I was one of his boys at Elizabeth City, about thirty-four years ago, when he was on the Board of Examiners and passed me there. I have been following him, watching him and believing in him ever since. I think he is a solid, safe and sound man, and some of you younger men will have to take up his views on medicine in the very near future.

I have made some comparisons in my mind, just about the same as Christ made when He spoke in parables. For instance, if your old automobile goes bad very often, and you wonder and fume, and sweat and say all sorts of things, and then all of a sudden you decide to take it to a garage, and when you get there in a few minutes some one fixes it up for you and you are off in it and gone again. Evidently this glandular treatment, in my mind, has come to be the proper thing. You may notice that it does bring things to bear that you have never noticed before, and then you will know that the Doctor has thoroughly covered the ground, that it is the running power of the whole machine. A man goes to wreck pretty soon if there is any trouble in this respect, and it is not attended to. Therefore I compare the timer and carbureter of your car to the endocrines of the machine, just as the ductless glands are to man's proper working and efficiency, his normal life and health.

Dr. K. G. Averitt, Fayetteville, Route 9:

About thirty years ago Dr. Weaver also examined me on physiology. I am sure had he asked the question then, what is the function of the ductless glands, I would have written that they had no known function, and I guess he would have accepted such an answer as the true one. But I am glad to see that today he would not accept that answer, if he were on the examining board now and I were to come up before him.

As I stated yesterday in a little historical paper, this field is the most important one that modern medicine has developed and is developing. When we read and see the great work that Crile as a surgeon has done and is accomplishing in thyroid work, and read of Bandler's work and Barker's work, it is wonderful to see how much information these men have given and are still giving us.

Dr. Weaver, as he stated in his paper, in 1911, before those men began to develop this theory, predicted what they are accomplishing now, and I am exceedingly glad that this Society has had so many excellent papers on this line. Last night we listened to a very excellent lecture by Dr. Pemberton on the thyroid; the Chairman had a most excellent and exhaustive paper on Insulin, which is on the same line, and today we had the best of all the papers, by Dr. Weaver. He has gone into it thoroughly. It is a subject which offers greater opportunities for study and thought than any other one subject in medicine today, and as it is developed more and more, I am confident that we are going to find that many conditions that heretofore have been almost hopeless will be readily overcome. When we see the immense amount of good that is accomplished in cretinism and myxedema, it is only reasonable to suppose that, as the thing is worked out more and more, things like Mongolian idiocy, which we know is due to some condition of the pituitary gland, will be measurably benefited if not cured. If anything can be offered as a remedy that will benefit a weak-minded child or a person of weak mentality, even if we had to keep it up for life, it is well worth all the study put forth to develop it.

I want to thank Dr. Weaver. I have always had a deep respect for

him as a man since he examined me, and I am always watching him, because he always gives us something good.

Dr. Louis E. Bisch, Asheville:

I think that when we hear a paper such as the one which has just been read, in which the attested data concerning endocrinology have been summarized, we are left with a feeling of confusion. There is no question whatever, as the essayist has pointed out, that the general medical practitioner ought to take more interest in than this vital subject. It happens that the field of endocrinology has fallen largely to the lot of the neurologist. It really started with the neurologist's treating the thyroid gland—especially the cretins with thyroid extract—and only lately has this newer science made such wide ramifications.

In a way, it is quite natural that the endocrine system should have been so carefully studied by the nerve men, because in all endocrine disorders there is some trouble of the sympathetic nervous system. In fact, I feel justified in saying that every neurotic should be studied from the viewpoint of the endocrine system.

For a time most attention seemed to have been centered upon the thyroid, but now interest seems to have shifted to the adrenal glands. Both from a diagnostic and a therapeutic viewpoint it is interesting to note that dysfunction of either the thyroid or the adrenal glands gives almost identical clinical pictures.

Personally, I have never been in favor of the popular pluriglandular administration of the endocrine glands. It is much better to start with the gland that one deems to be the seat of the trouble and work with that until one is sure whether or not the right course is being pursued. To be sure, often more than one gland is at fault, but one should reach this conclusion in a logical and scientific step-by-step process and not give a shotgun prescription of a lot of extracts and then not know, whether the result be satisfactory or otherwise, which of the glands has been at fault, or whether it has been a case of hyper- or hyposecretion or an unbalance of one gland with one or several of the others of the system.

Dr. A. A. Kent, Lenoir:

I would not attempt, because I could not, to shed any light upon this wonderful subject which has been so beautifully presented to us this morning, but I do feel that I can not afford to allow an opportunity to escape me to hand Dr. Weaver another bouquet. He deserves it for the splendid life of service which he has given to the North Carolina Medical Society. I can not claim him as my godfather in medicine, though I am proud of him as a member of our Society. I, also, have watched him and learned to love him, and it is refreshing to hear a man of Dr. Weaver's time of life grapple with a subject like this which he has presented to us so clearly this morning. It is an inspiration to me, and I know it must be to younger men, to have a man of the Doctor's years read such a paper, and to realize that the older men can grapple with this subject as well as the men of a younger generation.

I thank you, sir, for the paper which you have so ably presented to us.

Dr. Weaver, closing the discussion:

To sum up: The conspicuous feature of organotherapy is the widespread interest and growth in its present development, notwithstanding the shortcomings of physiology in the fundamental principles of endocrinology. (1) The endocrine glands manufacture identical, specific, chemical substances—hormones or "chemical messengers"—which mediate between distant organs which correlate with each other in the nature of substitution and homostimulation. These hormones are poured directly into the blood stream, taking the place of or stimulating crippled organs, as, for example, thyroid extract in hypothyroidism. (2) Another fundamental fact is that the hormone or secretion is identical with the gland, from whatever animal obtained. (3) An extract of an organ administered in suitable amount has an elective affinity or stimulatory action on the functional activity of the same organ in the patient to whom administered.

I have nothing further to say, except to thank the gentlemen for the meed of praise that they have given to me.

DIAGNOSIS IN BORDER LINE MEDICO-SURGICAL CASES

Harold H. Newman, A.B., M.D., Salisbury

'Tis not the fall
That determines the destiny of men,
But what man does, after the fall,
When facing duty again.

'Tis not enough
To absorb the knowledge of men,
But to add one's bit, as one goes,
From the fragment and the end.

From fragment here and there,
Build castles in the air.
Mend, mould and shape as best one can,
Give added vision unto men.

In this short treatise I shall not dwell so much upon details, but shall endeavor to discuss some fundamental principles, relating to more accurate and earlier diagnosis in medico-surgical cases.

We are all aware of the difficulties that the general practitioner has today ,the hurried calls, the great amount of work and worry that falls to his hands. The difficulties attending more careful observation of cases with instruments of precision, laboratory methods and x-ray, make thorough study of every case an impossibility. But every case that comes under the practitioner's observation does not require such study, as the greater bulk of his work is easily diagnosed, and only a small number of cases require thorough study.

It has been very difficult to obtain accurate histories of the diseases

which patients have had, for, unlike past days when the family physician was the family's constant companion from generation to generation, now in this nervous age in which we live, *many* practitioners administer to the health and needs of a family, and accurate histories of past diseases are not easily had. The value of a correct history cannot be underestimated. Often opinions have been incorrect and after diagnosis has been determined by pathology the patient will make some statement that, had it been made earlier, would have given a clue to an accurate diagnosis.

Careful examination is essential to correct diagnosis. But often we examine a case looking for a certain disease and attempt to make the symptoms fit a biased mind. Wherever symptoms are not typical textbook pictures the case should be studied thoroughly and with utmost care. Too many patients have been operated upon for diseases they did not possess, whereas there was sufficient evidence present to have made a correct diagnosis, had it only been looked for and determined. Examination of all medico-surgical cases should comprise a very careful urinalysis, chemical, microscopical, and sometimes functional. The heart and lungs should be gone over carefully. Red and white blood counts, hemoglobin, and, if possible, Wassermann test should be made. Blood-pressure should be recorded. The glandular system should be carefully scrutinized. Such examinations might reveal hidden conditions and may direct attention to surgical hazards distant from the operative field.

A competent urologist and equally capable x-ray man I consider the greatest assets to a successful surgeon. A few cases will make this clear. (Case 1). Mrs. K. had appendectomy performed, after which the original symptoms remained, and then right oöphorectomy was done and the symptoms still were present. The urologist and roentgenologist readily revealed ureteral stone just below the pelvic brim. (Case 2). Mrs. F., with many symptoms of appendicitis, was sent to the hospital for operation. The first urine examination was negative. The second examination demonstrated pus in the urine. Right ureteral catheterization was difficult, but catheter slipped by apparent obstruction, whereupon pus burst into the bladder around catheter and also came from catheter with excessive pressure. Pyelogram showed greatly dilated ureter and kidney pelvis. (Case 3). Mrs. W. after appendectomy had continuation of symptoms with septic fever and chills. Urine contained pus and treatment for pyelitis resulted in cure. (Case 4). Mr. A., age 20, diagnosed acute appendicitis, appendix pointing north. Urine contained a few pus cells, granular casts, cuboidal epithelial cells, and albumin; kidney function diminished; blood pressure, 155 systoltic, 90 diastolic; temperature 99; W. B. C. 10,800; pulse 80. Second day edema in the eyes and lower extremities. Third day blood pressure had arisen to 185 systolic and 94 diastolic. Diagnosis pyelonephritis. Patient was not operated upon. In these four cases by proper assistance two patients were saved unnecessary operations, whereas two patients without such diagnostic help had unnecessary operations.

Heart and lung diseases make bad surgical risks. The internist's advice and early preparatory measures are desired when acute conditions might arise that may require surgical intervention. Digitalis administered as soon as a surgical condition appears in the horizon may

tone up a diseased heart and make it withstand a surgical crisis. Diseased lungs, heart and kidney call for particular anesthetics. This information furnished early to the surgeon when operation is imperative may spare just the element of time necessary to save life.

Blood examination may make known an existing anemia or bring to light the degree of infection or healing power of the patient. Proper blood, heart, lungs and kidney examination, with other indicated examinations, early worked up and prepared for the surgeon when his services are called will save much time and enable a more accurate diagnosis and earlier operation.

Proper spirit and co-operation should at all times be had, and the interest of the patient always placed first. No family feuds nor cliques should enter into any case where human life is involved, but wholehearted and prompt service by all should be given. A feeling of good fellowship and brotherly love should dominate all transactions between medical men.

I have felt for some time that from the practical business point of saving human life we are not making the best of the diagnostic methods now known to medical science, nor are we offering the public the greatest medical service that our profession is capable of giving. The practitioner, overworked and underpaid, is not so situated that he can always offer his best. The specialist, looked upon as the aristocracy and capitalists by the practitioners, is not in as close touch and harmony as he should be. I feel that at the present day we have lost much of the prestige of the old family physician, and are not quite as humane as those who preceded us. In those days knowledge of medical science was such that the family physician could offer all that the profession possessed, and the attention of the family was undividedly attached to their physician, who was a friend, an advisor, loved by all and who held each family as a sacred trust, his heritage. But the great achievements of medical science have carried the duties of administration far beyond the faculties of one man. Given these achievements we have wandered from the old prestige and service, and in this new era have never adjusted ourselves as a profession to the existing conditions. We are not organized to administer our best to the people, nor organized so that the people can administer to us best. I believe that these conditions, accurate history records, better examinations and co-operation, can best be had through the community clinic plan. I but echo the voice of one of America's leading surgeons, who says, "If we do not adopt such a plan, the State will, and when it does, good-bye."

The community clinic plan is such that units of medical men organize to render better service to humanity, to become more efficient, and to have the financial affairs looked after by competent business management. This is not a medical group, as now known, but includes every branch of medical men. Such a unit may embrace the entire community personnel, or in the larger cities many such units could be had. The plan more in detail is that said unit secure a building suitable for the demands of such work. There should be provided a reception room, business manager's office, laboratory and x-ray quarters, library, and consultation

and examining rooms for every medical man. Each man should have a special field of work, such as pediatrics, obstetrics, urology, gastro-enterology, neurology, dermatology, surgery, x-ray, laboratory, general practice, diagnosis, etc. In smaller communities some of the specialities could be combined. There should be a predominance of general practitioners and obstetricians. All calls, charges and collections should be through the manager's office and each man should be required to pay to the clinic a certain percentage of money collected through his service, a percentage necessary to defray the expenses of the clinic.

A history department should be maintained where records of cases should be kept by competent secretaries, no elaborate records that would burden general practitioners, but just such information as would be of benefit in the future. The records should belong to each patient and be held confidential, and transferred to any clinic that the patient might become affiliated with through change of residence or otherwise.

I believe that following such a plan we could best approach our ideals of fraternity, co-operation and service, and that we could then render our people the best that medical science possesses. We could again establish ourselves in the minds of men as our fathers of yore, and return to the old adage, "The family physician, the friend of men." We could thus regain our prestige, magnify our profession, give charity where needed, create vacation periods of study for every man and have the financial side of our duties transferred to efficient but humane business administration. We could thus offer to humanity the best in borderline diagnosis in perplexing and all important medico-surgical cases, through accurate histories, more detailed examinations, and better co-operation.

THE OLD FAMILY PHYSICIAN

The Old Family Physician, the Mother of Men,
With a love so great that he was a friend.

Science alert, from the old family tree,
Sprang forth many branches for service set free.

Proud of achievement, from mother free,
Strong salwart sons in the world have a spree.

Marked by success of a different dimension,
Parted from influence in a world of contention.

Glamor of shekels, the old prestige in view,
Led many quacks the world to subdue.

Our charity dimmed, our pestige shared,
Minds of men at sea with ideas impaired.

The world awakens, aloud with the cry,
Help, help, it calls to the passer-by.

State, groups and colleges to make amends,
Form organizations to meet certain ends.

Their purposes high, their efforts true,
Their plans not inclusive for conditions in view.

Strong stalwart sons their knowledge gained,
Should unite to remedy old ideals maimed.

The clinic with service, and minds concentrated,
Can offer the world medical science unabated.

Woo science, but seek charity and prestige again,
Back to the Old Family Physician, the friend of men.

DISCUSSION

Dr. Hamilton W. McKay, Charlotte:

I never hear a paper like the one that has just been presented that I don't think of a paper that I heard Dr. Braasch read about two months ago. The reason I thought of it is that two cases of Dr. Newman's appear to be similar cases. Dr. Braasch reported 1,231 cases of kidney stones, 500 of which had been operated on, when they came to the Mayo Clinic, for other causes. When we hear of a large number of cases like that it emphasizes the importance of such a paper as Dr. Newman has read. A society like this I think cannot have too many papers for emphasizing diagnosis.

Dr. Ben. H. Hackney, Lucama:

I am highly gratified with the paper, which brings up the question of differential diagnosis. The important points the Doctor has brought out is the question of exclusion, and to think before we act. Those of us who have been practicing medicine remember many cases that have come that have been operated on and have had entirely different findings from those of the clinical examination. Sometimes it pays us to wait and watch. I thank Dr. Newman for his excellent paper, as it is one that will set us all to thinking.

Dr. G. W. Choate, Salisbury:

I want to emphasize one thing in this connection. The case of Mrs. F. was one I sent to Dr. Newman, and after examination it proved to be a case of pyelitis, and not of appendicitis, as we at first thought. It appeared to be a clean-cut case to us, and we had set a date for operation after what we thought a careful diagnosis. It appeared to be an acute case of appendicitis. We had set the time for operating at two o'clock, and at twelve o'clock that day the examination revealed pus in the urine during catheterization. We cleared up that pus after a week's treatment, and the next day, even, the case was better. Now, you can see what a hole we would have been in if we had insisted on an operation for appendicitis. Therefore, I want to recommend that we all insist upon the help of the surgeon. Then if he wants the help of the urologist, all are very necessary in arriving at a correct diagnosis in surgical conditions.

I want to thank Dr. Newman for his most excellent paper.

NARCOTIC DRUG ADDICTION DISEASE

W. C. Ashworth, M.D., Greensboro

The subject of narcotic drug addiction disease is one that has confronted medical and lay minds from almost time immemorial. The apparent innate craving of the human race for some sort of stimulant dates back almost to prehistoric ages. The Bible and sacred literature are full of narrations of kings, queens, and other notable characters in Bible history who indulged in stimulation to increase buoyancy of spirit and obtain oblivion from the stress and strain of life. Byron speaks of having "Drunk the cup of pleasure to its dregs," and his bibulous propensities have been the subject of much discussion among his contemporaries and friends. Narcotic drug diseases, however, seems to have originated primarily with the Chinese, since which time the habit has spread, to a large extent, through every civilized nation on earth. In all countries, in every climate, among all tribes and races, man has learned the action of certain vegetable and mineral drugs, and classified them according to his experience with them. The drug, which is most lethal, or poisonous, which carries with it the possible sting of death, has ever attracted the human race. Man has ever flirted with temptation, but regretted her embrace. Drugs possessing habit-forming properites have a pecular seductiveness that but few persons can withstand after having become acquainted with their action. In small doses the thought centers and faculties of ideation seem to be increased; fancy, for the time being, is set free, contributing a joyousness and careless freedom which the wearing cares of the daily struggle for existence cannot hamper nor suppress. In larger doses, which inevitably follow, the narcotic influence becomes more marked; coordination is impaired, and relationship with the world at large is disturbed to such an extent that the victim exists in a dreamy, self-centered-world state, the return from which is disturbing and irritating. After a varying period of indulgence the unfortunate finds himself in the embrace of the enslaving drug, and, because of the accompanying impairment of volition, soon admits, to himself at least, that he has become hopelesly ensnared in the meshes of habit, and that assistance will be needed in order to enable him to secure freedom.

The prevalent belief that the use of narcotic drugs is confined largely to the unwashed element or flotsam and jetsam of society is not well founded. It has been my observation that the erudition of the individual does not give him or her immunity from the use of narcotic drugs. The disillusionment of the lay and profesional mind of the above belief is of importance for the reason that we shall take more interest in this class of cases if we recognize the truth that all classes are subject and an easy prey to the insidious action of narcotic drugs. We are all inclined to regard the drug user as a wilful pervert, completely devoid of the fundamental elements that enter into the real man or woman.

I speak of narcotic drug disease purposely, in order that our nomenclature may be changed in respect to designating every drug user as a "dope fiend," which is equivalent to a stigma that is not easily removed. It has been my observation, from long and painful experience, that they

are suffering from a distinct clinical entity, and that the habitual use of narcotic drugs produces certain physical changes, irrespective of pathology, that constitute narcotic drug disease. The lack of this knowledge makes it unfair to the drug user, since it deprives him many times of scientific and skilful treatment, which he rightly deserves and must be given if a cure is to be obtained. The symptomatology of drug using is complex, and many times it is hard to differientiate from some existing malady independent of the effects directly traceable to the action of narcotic drugs. I am convinced that every drug user is a sick man or woman, regardless of the condition of the person which existed prior to the formation of the habit. It is an inescapable fact that a certain impress is left upon the drug user that cannot be entirely effaced, though the patient may be cured of the habit.

The psychology entering into the average narcotic drug case is both interesting and instructive, and must be reckoned with if satisfactory results are obtained. It is true that the narcotic drug patient is hypersensitive, and, therefore, the treatment is greatly reinforced by psychotherapy and strong mental suggestion. We must not, however, overlook the fact that narcotic drug patients have real physical discomfort, which must be intelligently remedied by proper and well selected remedial agents. It is necessary to have almost limitless patience with this class of cases, since we cannot always tell when the patient is malingering, and when in real need of some pain-relieving drug.

The auxiliary treatment of drug addiction cases is highly important, since it appeals both to the physical and mental side of the patient. We can, in many instances, by securing the confidence of the patient, save ourselves as well as the patient the prescribing of drugs that hinder or, at least, greatly prolong the successful treatment. If we once fully realize the fact that this class of patients are in need of active and aggressive treatment we shall be in a position to better serve them during the ordeal of the final withdrawing of the narcotic drug.

The treatment of narcotic drug disease should not be undertaken unless the patient is confined in an institution, therefore under the immediate supervision of the physician in charge. It has been my experience that no routine method can be followed successfully in the treatment of narcotic drug cases. In fact, the treatment should be outlined after a careful and painstaking examination of the patient. If the physician cannot depart from a routine method in the treatment of his narcoic drug cases failure and disappointment are inevitable. We must give due consideration to the personal equation, temperament and idiosyncrasies of our narcotic drug patients if satisfactory results are obtained.

If the gradual reduction method is selected the reduction must be very tentatively made in order that the nervous system of the patient may not be unduly shocked on account of the sudden deprivation of the drug. It is an established fact that no scale of reduction for a drug patient is appliciable to all patients alike. If a patient, on account of a too rapid reduction or sudden withdrawal of the drug, suffers acute withdrawal

symptoms the ultimate success of the treatment is hampered, and the patient disarmed to make a successful fight for freedom.

It has been my observation that compartively few drug addicts have formed the habit from dissipation *per se,* but on the other hand a major per cent of them have suffered from some painful disease which has necessitated the prolonged use of the drug, which, in most instances, has been administered by the physician in charge in the best of faith, with no intimation that the patient would become a confirmed narcotic drug user. It is true that the neurasthenic, psychasthenic, or neuropathic individual is unduly susceptible to the tranquilizing effects of narcotic drugs.

It is absolutely useless, of course, to undertake to cure the narcotic drug patient who is suffering from some painful disease, whether it be functional or organic. It has always been my practice to ascertain, if possible, the underlying cause, whether physical or mental, responsible for the formation and perpetuation of the habit. It is, also, of the greatest importance, to ascertain and correct faulty environmental conditions which militate against the convalescence of the drug patient. I have always maintained that any treatment for narcotic drug disease is comparatively futile unless the patient can break away from the life situation which contributed to the development of the habit of using the drug. We must, also, reckon the physical side of the treatment, which plays a very important role in the successful ending of the treatment. I cannot stress too emphatically the importance of gaining and retaining the full confidence of the patient, without which any treatment will be an absolute failure.

If I have succeeded in arousing the slightest amount of interest in the narcotic drug problem, which is now agitating almost every nation on earth, I shall feel amply repaid for the time spent in writing this short article.

In the language of the poet, which is a confirmation of the old adage, "He who disobeys must pay,"

"The tissues of the life to be,
We weave with colors all our own,
'Till in the fields of destiny
We reap as we have sown."

Dr. J. V. McGougan, Chairman:

Another good paper. Is there any discussion? Dr. McBrayer, how much experience have you had with drug addicts?

Dr. Reuben McBrayer, Sanatorium:

Not any, sir, at all, but I might state that papers like this are well in place at any meeting. We should be reminded constantly of these things because they are so easily started.

Dr. D. H. Nisbet, Charlotte:

I want to ask one question. When I was an interne and we would

get chronic cases, it was the general opinion of the visiting staff that they could not be cured. If they did well, we were sure the morphine was getting to them some way. I want to ask Dr. Ashworth what his opinion is, say, when an addict is taking fifteen to twenty grains daily.

Dr. Ashworth, closing the discussion:

It is a fact that about ninety per cent of drug cases relapse sooner or later. Some of the most difficult cases I have ever had used only half a grain a day, and yet when I attempted to withdraw the half grain the patient would collapse completely. In other cases, when patients were using fifteen or twenty grains a day they seemed to gain in weight, and when the larger amount was withdrawn they did not seem to suffer as much as the patient who was using a smaller amount. Of course, the question narrows itself down to the fact that every case is a law unto itself.

PUBLIC HEALTH AND EDUCATION

Chairman: Wm. M. Jones, M.D., Greensboro

SOME OF NORTH CAROLINA'S PROBLEMS

(Chairman's Address)

Other sections of our Society have their functions well and clearly defined, whereas this, being designated Public Health and Education, is supposed to include any and all activities of the profession not specifically embraced by some other section. Covering such a broad domain, this might well be designated as the section on longevity, for otherwise why Public Health and Education, if they are not able to bring about an increase in life's span?

Suppose for a few moments we take a brief inventory of what has been accomplished in the last few years. About fourteen or fifteen years ago Dr. Irving Fisher, in his report on National Vitality—indicating the conditions in the United States as to health and disease—pointed out the fact that the average expectation of life was forty-five years, and that there was constantly sick about .03% of the entire population; that one-half of .01% had tuberculosis. Further, that 40% of the sickness and disability resulting therefrom was preventable, and that if this loss could be stopped it would add fifteen years to each life. What has been accomplished in this time—during the period from 1910 to 1920? There was a reduction of .07% in the death rate of the registration area, from all causes. This is remarkable when we consider that during this period we suffered from one of the most malignant epidemics this country has ever experienced. In this same period tuberculosis decreased 28%; diseases of children, 11%; typhoid fever, 63%, etc. With these facts, nobody doubts that life can be extended; but if we are to continue to decrease our mortality we must have education, and not only education, but also a willingness to pay the price. It does not follow that because we know we shall always pay the price, for don't we all know that cleaning the teeth after each meal and a biennial visit to the dentist not only save the teeth *per se,* but a great deal of suffering, and that in the end this is good business because it is economical?

Our problems then resolve themselves into the question of education or knowledge, both as to cause and cure, and whether we will pay the price.

We North Carolinians have always claimed that we live in the garden spot of the world. We apply individual and descriptive names to the various sections of our State. Everyone knows that this is the "Land of the Sky" and a few miles east the great Piedmont section, then the Sand Hills, which are better known in New England than in some parts of our own State, and in the extreme east the coast. Within our borders are to be found the highest peaks east of the Rocky Moun-

tains. Our soil and climatic conditions are equalled by but few and surpassed by no section of the world. We have a greater variety of botanical plants growing naturally than are to be found in the entire continent of Europe. In our mountains are rare and precious gems, some of which are found nowhere else on the earth. Our people are the purest bred Anglo-Saxon to be found, for we have not emigrated nor received immigrants, and this is a practical proof of our claim to be the garden spot of the world.

But as "every rose has its thorn and every sweet its bitter," so do we have our handicaps. "All is not gold that glitters," for our ideal climate with its long and pleasant summers and with winters short and mild has been the cause of diseases due to bacteria, plasmodia and intestinal infections, while we have escaped to a great extent the respiratory troubles that are brought about by long housing, poor ventilation, and the artificial heat of severe winters.

While our climatic conditions have been favorable to man, they have been at the same time favorable to those enemies of man which cause many untimely deaths. These so favorable conditions to bacterial and plasmodial development have at the same time been as favorable to the carriers and hosts of these various causes. So we see that the insect season is like our summers—long; and the fly and mosquito are with us for a corresponding time.

These conditions constitute some of our problems, for they have been the cause of not only a high mortality, but of an even higher morbidity than that which can be judged from mortality statistics. We have no morbidity statistics, and our mortality statistics are fearfully inaccurate as to these conditions, because, while many of them are remotely and primarily the cause of death, they are not generally recorded as the principal cause.

We have had since before the Civil War what the negroes call "poor white trash." Today we know that these people are victims of hookworm and we know further how to cure those who have it, and also how to prevent others from becoming infected. This appears very simple and probably many look upon the hookworm as an uimportant factor. But consider, if you will, the fact that hookworms produce anemia and its sequelae. These people are unable oftentimes to support themselves physically and are incapable mentally of obtaining an education. They are consumers and non-producers—parasites, if you will, upon the body politic.

Another great drain upon us has been that great sapper of energy and strength—chills and fever. Here also we know the cause, cure and prevention. The time can come, with our present knowledge, when we can be free of hookworm and free of malaria, and when it does thousands of our people will be freed from shackles that have made unhealthy paupers of them. We have the knowledge necessary. The question is, are we going to apply it?

We have typhoid fever, diarrhea, and dysentery, the intestinal bacterial infections. These conditions are not going to be so definitely

attacked as hookworm and malaria, for we have no cure in these conditions and prevention covers a much broader field and consequently is not so effective. However, if we have gotten rid of hookworm and malaria, we have a much more efficient people, and they are not so liable to be overcome by these infections, on account of not having been debilitated by the malaria plasmodium and the bloodsucking hookworm.

There are many things that may and do contribute to the reduction of these conditions, and we know that they are being greatly reduced, from recent statistics. For instance, suppose we say that the automobile has been a great factor in the reduction of these conditions—and I am thoroughly convinced that it has been as great a factor as possibly any one thing, in that it has supplanted the horse. Consequently, the livery stables or fly incubators of our small towns and cities have been converted into garages. By eliminating the breeding places of flies, the automobile has certainly been a factor.

With the reduction of hookworm, malaria, typhoid fever and intestinal infections, we have *pari passu* a reduction in tuberculosis because we have a people of greater resistance; a people who have not been reduced to below par. So we find that eradication of one cause of death from a communicable disease helps lessen the reduction in another communicable disease.

It is these diseases that are North Carolina's problems. Of course, we are having the non-communicable conditions as are other sections of the country, but if we can eradicate the conditions that are directly or indirectly due to ignorance and which have been exaggerated by climatic conditions, we shall have taken a long step forward in public health and education.

However, for this improvement to be lasting and of permanent benefit our people must be educated. You cannot get lasting and permanent benefits in an illiterate democracy. Things that might be easy of accomplishment in a monarchy are oftentimes worth absolutely nothing in a democracy. Therefore I say that the improvement must come by education and not by legislation. Legislation will accomplish some things and will be a help in many indirect ways, but you cannot force the public, they must be shown. So the public must be educated, not only along the lines commonly understood as covering education, but in a medical way. Then how shall they be taught without a teacher, and who shall teach but the physician? There are so many things of a medical nature of which the person best informed along general lines is entirely ignorant, that it is absolutely imperative for the profession to give them the correct information, for here only can they get it.

One point in particular, upon which the public is distressingly ignorant, is that a strong medical practice act is of much greater importance to them than to the medical profession. Until this is fully understood and appreciated by the public, we shall ever be handicapped in public health activities.

SOME MEDICAL PROPHECIES

Joseph L. Spruill, M.D., Sanatorium

Coming events cast their shadows before them, and from a study of conditions of today and yesterday prophecies of the future can be made. A careful review of medical conditions and their results for the past twenty-five years hase caused me to feel that certain changes are due to come in the next generation of medicine.

Medical men are beginning to inquire into conditions, social as well as medical, and to satisfy themselves about certain things, or to have them so changed as to make them better for all concerned.

In the first place, I believe there will be in the near future a broader system of teaching in our great medical schools. At present most of our teachers are specialists, many of them men who have gone directly from the college into their specialities, with no training in general medicine. I submit the statement that, according to their advantages, and I am almost persuaded to state that in spite of advantages, the medical professors of twenty-five years ago were better teachers than are those of today, because they were all men of great general experience before they became specialists, and consequently had broader conceptions of medicine than the specialist can possibly have without this general training. Consequently our young men fail to get a broad general conception of medicine in our medical colleges of today.

Again, I think that in the near future more attention will be given by our teachers to symptoms and their importance—more particularly those of the early stages of disease. Today so much time is given to laboratory and mechanical means of diagnosis that there is little left for the actual study of the patient, and the young physician graduated today who locates in a remote section far away from the laboratory and means of mechanical diagnosis often finds himself at a loss because he has not been trained sufficiently to understand the plainer subjective and objective symptoms.

Then, too, the general practitioner is beginning to ask why the specialist and the group men should be paid so well, and he so poorly, if at all. And surely there is little justice in it. Were all specialists men who had had proper training in their special branches there might be some reason for this difference, but we know that many of them are those who have taken possibly only six months, or at most a year, and bloomed out into specialists. It is this class that the general medical man is after. I submit as a fair proposition that it requires more training, more skill and certainly more labor, time and nerve force for a general practitioner to pull a patient through an attack of pneumonia, typhoid fever or influenza, than for the specialist to remove a tonsil or an appendix. And yet there is no comparison in the fees.

The profession is being so rapidly filled with specialists and groups of specialists that the time has come when the general practitioner has little to do but stand with his back to the wall and advise his patient

which specialist or which group to consult. Of course, the people are largely to blame for this. They will go to some specialist who knows not half as much about anything as their own family physician, pay him an enormous fee for some trivial operation and come away satisfied, when they would count themselves robbed should their own doctor do the work and charge one-half the amount.

But I prophesy that in the near future the family physician will come into his own. He will prepare himself better and take advantage of certain opportunities that he alone has for the study and treatment of disease, and that no one can have but him, as I shall attempt to prove in the next few paragraphs.

Sir James Mackenzie divides disease under the following four heads:

THE FOUR STAGES OF DISEASE

1. *The Predisposing Stage*—The stage when the individual is free from disease, but is liable to be attacked, either from some inherent weakness or from some outside source.

2. *The Early Stage*—When the disease has entered the system but has not produced any preceptible alteration of the tissue; when the signs produced are mainly subjective—this is the curable stage.

3. *The Advanced Stage*—When the disease has caused destruction or modification of the tissue and its presence is manifested by a physical sign; and

4. *The Final Stage*—When the patient has died, and the tissues are subjected to postmortem examination.

At present by far the greatest stress is laid by our teachers on the instruction of the student in the study of the last two stages—the advanced and the postmortem. I believe that the doctor of the next generation will give more time to the study of the two earlier stages—the stages of prevention and cure of disease.

Success along these two lines can be accomplished only by teachers with the broadest conception of medicine. Specialists as teachers can never do this.

To achieve this, it is necessary to recognize disease and understand all the phases of its life history. It is therefore evident that only one class of physicians has the opportunity of acquiring this knowledge—the general practitioner.

His opportunities as family physician have enabled him to become acquainted with the lives of a number of people through seeing them before disease attacks them and watching them through the whole course of its development. He is the only individual who has the opportunity of finding out the significance of various signs, a knowledge of which is absolutely essential to the investigation of disease as well as to the rational practice of medicine. His opportunities give him a far wider

outlook upon disease than any other members of the profession, however experienced in the special branches. If conditions which predispose to or provoke disease are to be recognized, the investigator must have the opportunity of seeing the circumstances which led up to the invasion of the disease. It is manifest that neither the hospital physician nor the laboratory worker has this opportunity. The early stages of disease are manifested mainly by the subjective sensations. The patient, becoming conscious that something is wrong with him, does not consult the hospital physician during the early stages of his disease but goes to his family physician.

Complete understanding of the symptoms of a disease is not limited to a detection of that symptom and its mechanism, but necessitates a knowledge of the bearing of its cause on the patient's future. In other words, the investigator must be able to assess the value of the symptoms. To obtain this knowledge he must have opportunity of watching the patient for long periods. This the hospital and laboratory physician cannot do, nor can any one else except the general practitioner.

With a full understanding of the facts set forth, I believe that the future doctor will devote more time and care to the patient who consults him for some apparently trivial complaint, and will thoroughly investigate these earlier symptoms in order to correct certain troubles before they reach the second stage of disease. Too often these patients are dismissed with a casual glance, a few commonplace questions and a carelessly written prescription, only to have them return after a time with some disease which has progressed often beyond repair, or the careless physician finds, much to his chagrin, that the patient has consulted someone else.

Too often, in my intercourse with people throughout the State, I have inquired of some layman as to the qualifications of some medical man and had the reply that "Dr. A. is a splendid physician if you can ever get him interested, but he doesn't take any interest in you until you are half dead." It would be well here to call the attention of the younger men of the profession to the fact that the most successful practitioner, from any viewpoint, is he who takes most interest in his patients. Every patient who consults his physician is either sick or thinks he is, and the surest way to blunder in diagnosis as well as to lose your patient is to show a lack of interest in his case.

There are two other classes of patients that I believe the future physician will take more interest in, and those are the chronics and so-called neurasthenics, for I realize that, while little can be done for most chronic cases, much can be done for the patient in the way of interest and sympathy, if nothing more.

Neurasthenia is a term used in many instances to "cover a multitude of sins" as well as a lot of ignorance on the part of the doctor. Any patient who consults his physician with a line of nervous symptoms is usually dismissed with the diagnosis of neurasthenia, and plainly shown that the doctor is not interested in him and doesn't care to see him again. I feel that the better trained doctor of the next generation will realize

that fact that so-called neurasthenia is a disease based on some cause, and will endeavor to find that cause and institute the remedy; and also that he will realize the fact that the chiropractors, osteopaths, and other "paths" are reaping rich harvests every day from the neurasthenics and chronics who are being daily turned away from the regular doctor's office by the lack of interest shown in them.

So long as we have had any history of medicine, the doctor has taken care of the sick poor. They have always done this and done so without complaint. People have quietly sat by and let them do so without much thought of sharing the responsibility. It is a well known fact that the average physician collects only one-half of his bills. I believe the time is coming when the people will wake up to the unfairness of it and rise to his assistance by sharing in this burden. I feel that in a few more years we shall see our counties issuing bonds to build and maintain municipal hospitals, where the poor can be treated by their own family physicians, and the doctor paid out of the funds collected and kept for the same. At present, should such hospitals be provided, of course the physician who put the indigent patient there for treatment would be expected to give his services if the county or city provided the other expense, but I believe the people will come to see the injustice of this. Why should the doctor give his time and service without remuneration when everyone else connected with such an institution is fully and adequately paid?

It has long been known that there exists a great deal of jealousy and envy in the medical profession. There is little of friendliness and goodwill among them, and in many instances a lack of confidence and trust. This, to my certain knowledge, is passing away, and I feel sure that the younger men are responsible for its going and that the next generation will fully realize that we must have the hearty goodwill and support of each other in order to do the best work and make our profession stand for what it really is.

Finally, let me say that I believe the coming doctor will be a better business man than the doctor of today and yesterday. By this I do not mean that he will commercialize medicine, or that he will ever turn a deaf ear to the call of the poor who need his services. God forbid that that time should ever come. The experience of all medical men has been that it is not through the poor that he loses most, but from the fellow who is the habitual doctor's beat, who pays all his other bills promptly but leaves the doctor's to the last, if he pays him at all. I believe that the coming doctor will realize that he is due a proper remuneration for his services from the class of people who are able to pay, or else refuse them his services. It is his duty to himself and his family to provide a comfortable living and to lay aside a competence against the day when the practice has outgrown him, when he shall have become a back number (just as all of us will become if we live long enough), when the time shall have come when he is unable to work. Let me say to the young here tonight: look out for your collections; collect your bills when they are small. Many a patient can pay you five or ten dollars who, should you let him owe you a hundred dollars, not only could not pay it but would not try

to, and would curse you for what you have done. Remember, too, that the surest way to lose a patient and make an enemy is to let him get in debt to you.

For the last three years my work has taken me into all parts of North Carolina and in contact with most of her physicians; I have come to know several physicians who have grown old in the work, who gave their best days to their patients, serving them faithfully without thought of reward. Attending all alike, the rich and poor, exacting nothing, receiving only such compensation as their patients saw fit to pay, these men are now unable to work and are spending their last days in poverty, some of them suffering for the actual necessities of life; and, after all their sacrifice and service, in Scriptural language, "No man gives unto them."

A story was told at a recent meeting of the Medical Society of the State of North Carolina by Dr. R. H. Lewis, of Raleigh, of a physician who practiced in one of our small southern towns. He was one who never refused a call, and paid no attention to his collections; went to everyone who sent for him and gave them the best he had. The town outgrew him and the lot whereon his little office stood was sold and a handsome tall building was erected there. He was old then and too poor to rent an office in that building, so he took two rooms over a livery stable; got a board and had his name, "Dr. William Riley—His office is upstairs" printed on it and put at the bottom of the steps. Here he treated such patients as came to him, though they were few then. One cold sleety night he went to see a patient; being poorly clad he got wet and took pneumonia. After a while he began to be missed, and when his door was opened he was found dead in his bed. By his side lay a little account book and a stub of a pencil, and opposite each account in that book, written in a trembling hand, were the words: "Paid in full."

Well, they buried Dr. Riley and on the way back from the cemetery the question arose about putting a monument over his grave. His patients were poor, all the wealthier ones having left him when his days of usefulness were done (just as they will leave you and me when we reach that time of life). None of them had anything, so one of them went and got the old doctor's sign and nailed it to a stake at the head of his grave —"Dr. William Riley—His office is upstairs."

This is a beautiful story, beautiful because it is true; more beautiful because of the number of Dr. Rileys all over Virginia and North Carolina today. But to me there is more pathos than beauty, for had Dr. Riley required those who were able to do so to compensate him for his labors, he could still have attended the poor, have had his office on the ground floor here and also "upstairs" in the hereafter.

CONJUGAL TUBERCULOSIS

J. T. J. Battle, M.D., Greensboro

This is a subject of considerable interest for more than one reason. One is that we ought to know how much danger there is in such a situ-

ation; second, to inform the professional and lay mind of the true status of the existing condition.

There is a considerable variance of statistics by different observers as to the frequency of the contagiousness. Unfortunately there are very few statistical data upon this subject. The "National Health Library" of New York very kindly loaned me all the literature they have been able to collect on this subject, which is a few contributions from different parts of the world.

Before giving the results of my collections I wish to quote first from Dr. E. Ward, Tuberculosis Officer of South Devon, England: "Out of one hundred and fifty-six cases in which the mate of a tuberculous husband or wife was examined ninety-one were found to be tuberculous, sixteen suspect and forty-nine negative;" or 58% tuberculous, 10% suspect and 32% negative. He says, "My experience leads me to believe that the authoritative view is wrong; that it is direct infection and not predisposition which is the most important factor in the spread of tuberculosis, and that infection is correspondingly more frequent in a case of man and wife, when the exposure to it is greater and more prolonged." With the above figures the Doctor could not well arrive at any other conclusion.

In contrast I quote from Dr. Sofie Tillisch, of the Grefsen Sanatorium, Norway. There have been under her observation, from 1911 to 1920, 1,152 married patients having tuberculosis. In 72 cases or 6.2% the other consort contracted tuberculosis seemingly by contagion. In her cases there were thirty-six husbands and thirty-six wives infected. In these cases 69.3% were infected within two years. Dr. Tillisch among eight hundred and forty-one patients found evidence of clinically demonstrable child tuberculosis in one hundred and fifty-six, or 18.5%.

Dr. Harry Lee Barnes, of the Rhode Island State Sanatorium, says that "The histories of two hundred and twenty-nine consecutive widowed patients admitted to this institution from 1905 to 1921 show that ninety-three, or 40%, lost their consorts by death from tuberculosis, a tuberculosis mortality over three times that of the married people of the community, which was 12%. This is so very high that it should be dismissed from the argument, as there must be some local cause for such a mortality, as for instance such an attractive hospital for that class of patients."

There are two diametrically opposed views, one as expressed by Dr. Ward and quoted in the beginning of this paper, and the other by Fishberg, who says, "(1) Tuberculosis infection can only occur once; and (2) phthisis evolves only in persons who are for one reason or another predisposed to the disease. Inasmuch as the non-phthisical consort has already been infected with tuberculosis bacilli during childhood, all new opportunities for re-infection by cohabitation with a consumptive consort are of no avail to produce phthisis. It is his or her constitution that determines whether tuberculosis will develop, and not the opportunities for re-infection." Out of one hundred and seventy cases only 3% became infected.

In Ernest G. Pope's mathematical investigation of the imporant bearing that assortative mating has upon this subject (which he had not completed at his death, but which has since been carried out by Karl Pearson, F. R. S.), he concludes as follows: It would seem probable then (1) that there is some sensible but slight infection between married couples; (2) that this is largely obscured or forestalled by the fact of infection from outside sources; (3) that the liability to the infection depends on the presence of the necessary diathesis; (4) that assortative mating probably accounts for at least two-thirds infective action for not more than one-third of the whole correlation observed in these cases.

Sir Herman Weber in sixty-eight cases 14%; Burney Yeo 17%; Brehmer 12%; Haupt 5.2%; Cornet 23%; Jacob and Pannwitz 8.5%; Weinberg 5.9%; Ludwig Levq 2.8%; Arnold Minnig 8.7%.

As medical director of an insurance company, in the past two years I have collected seven hundred and thirty-two cases of family history as given on the examination blank. Only the cases of tuberculosis of the lungs have been considered, and as people generally are somewhat averse to giving consumption as the cause of death of a parent under any conditions, but more especially when it is known that such information is rather against them as an insurance risk, I must believe these statistics are about correct.

Of these seven hundred and thirty-two cases where one consort has died there were two hundred and thirty-nine husbands and four hundred and ninety-three wives. This is quite a difference from all other statistics at hand. Most others show about an equal number.

In forty-four cases or 6% both died of consumption. Of these there were two cases where both died the same year. The greatest mortality was in the fifth year, viz: seven cases. Of these seven cases the infection took place: one in third year; one in fourth year; the others the same year of death, the longest being fifty years; the general mortality being about 1% at the present time. This finding must be explained only upon the ground that intimate association increases the mortality, and contagion is the direct cause. However, a great majority of these cases date back a good many years to the time when the general mortality was 3% or more, so the difference is not so great as it appears.

DISCUSSION

Dr. P. P. McCain, Sanatorium:

This problem resolves itself into the question of whether or not adults can contract tuberculosis. I do not agree with those who say that adults can not become infected from an outside source and that all adult tuberculosis is due to the lighting up of an old infection contracted in childhood. Neither do I agree with the view that all children are infected with the tubercle bacillus before they arrive at the age of puberty and that this infection completely protects them against another infection in later life. It is certainly true that adults are much less susceptible to

infection than children, which is probably due in large part to a partial immunity acquired through previous infection.

In a rural state, such as ours, the percentage of infection by the tubercle bacillus is much smaller than in the crowded cities. Probably not more than thirty-five to fifty per cent of our North Carolina population would give a positive tuberculin test, which only shows infection and not disease. Infection which has not developed into disease does give a partial immunity, but, as Krause suggests, this immunity probably lasts only as long as the tubercle bacilli are alive. But even when the immunity is active I think it altogether possible for adults to get such a large dose of virulent bacilli as to get a new infection, and that this infection will develop into disease unless the bodily resistance is unusually good. Married people live in closer contact than any other group of people, and are more likely to contract the disease from each other than any other class of adults.

A FURTHER STUDY OF THE PROBLEM OF A CLINCAL MEDICAL SCHOOL IN NORTH CAROLINA

Isaac H. Manning, M.D., Chapel Hill

Since the problem of a full four-year medical school was presented a year ago, it has been the subject of an intensive study by a committee appointed by the Governor as ex-officio chairman of the Board of Trustees of the University, and in certain of its aspects by a committee appointed by the President of this Society. I think it proper that the medical profession of the State should be given the results of this study. I do not presume, however, to make a report for either committee, nor have I any authority to speak for the University, but I may, without impropriety, give you such information as has been gathered and my own conclusions therefrom.

Rarely, I think, has a project of such potentialities been received with more general approval by our own people, if one may judge public opinion by the attitude of the press. It may have been that the magnitude and difficulties of the project were not fully realized, but certainly there was no active opposition and very few unfavorable comments. The national authorities, the Council of American Medical Association, the General Educational Board (through their executive secretaries, Drs. Colwell and Flexner), and individuals of national influence, many of whom were consulted by letter or personal interview, not only approved, but were interested in it as a matter of more than local importance. That the State should have a medical school is conceded.

The type of school which the State should have is like-wise beyond question. The "divided school" in any form whatsoever is universally disapproved. The sentiment throughout is very strongly in favor of a closer co-operation in the teaching of the preclinical and clinical subjects, and between the laboratories and the hospital. This cannot be brought about unless there is a phy-

sical contiguity of the teaching plant. This conception of a modern medical school is exactly expressed in the plans of the new school at Vanderbilt University, in which the buildings are grouped about a small quadrangle, the laboratories occupying approximately one-half and the hospital the other half. There is no place in the present program of medical education for the divided school.

The university medical school located on the campus or its immediate vicinity is regarded everywhere as the ideal school. Dr. Colwell, of the Council of the American Medical Association, writes, "No university should in future consider the establishment of a medical school except on its own campus." The university and the medical school have much in common. They are concerned with pedagogical problems of the same general character, with developing and maintaining standards of scholarship and of ethics, with encouraging research and sound thinking. It appears to have been the purpose of organized effort to bring the medical schools up to university standards and now to stabilize them under university control. University control of a separated school can be effective only in so far as may be conceded by the local faculty, and in lending its name the university assumes an obligation that it cannot discharge.

Three very definite conclusions may be drawn from the investigations: (1) The State should have a full four-year medical school. (2) The school should not be a divided school. (3) The university medical school located on the campus of the university is the ideal school. With these conclusions in mind we may attempt to work out the problem. I may say that as the investigation proceeded the problem as a whole became increasingly complex. I think we should hold to an ideal unless there are inseparable difficulties clarly in the way of realizing it.

First we found that we had underestimated the cost of construction. After consulting with Dr. Goldwater, of Mount Sinai Hospital, of New York, who is regarded as perhaps the most practical and expert authority in the country on hospital planning and construction, we reached the conclusion that a hospital of two hundred beds, with a nurses' home of adequate size and all equipment, would cost around one and a half million dollars. The maintenance budget, irrespective of all sources of income, should be about two hundred and fifty thousand dollars a year. Two questions immediately arose. First, could we justify the expenditure of this sum of money for the purpose of establishing a medical school? Second, should the University add this very large sum to its already very large budget?

In my own judgment, we should answer the first question frankly in the negative. Obviously the primary purpose of every hospital should be to supply a needed service to the sick, and this service should be established independently of any service the hospital may render as a teaching institution. If we were investing private capital the question would not be raised, but the use of

public funds should be carefully guarded and an adequate return to the the taxpayers made reasonably secure.

I believe the medical school is urgently needed, and that it will help substantially in the solution of the rural problem, and the general shortage of physicians, but I do not believe it will furnish a complete solution of either problem. The number of students that a plant of the size contemplated can admit, the number of physicians actually graduated year by year, which would not exceed fifty, I should say, will not supply the demand. Viewing the proposition as a school proposition cannot justify the expenditure of so large a sum of money.

On the other hand, I am thoroughly convinced that one of the most pressing needs of the State is a hospital in which the less fortunate of our people may obtain hospital service at a minmum cost to the individual. Many of you are more aware of the difficulties of obtaining hospital service for the poor than the writer. I do not critize the hospitals of the State in stating that at the present time we have no adequate provision for people without money. There is a constant appeal to these institutions which they are unable to meet. Private philanthropy has done very little, our municipalities less, and the counties practically nothing. The situation is deplorable. I was much interested in a statement made by Dr. Bardeen of the University of Wisconsin in connection with a similar problem. He said: "The most influential factor in securing an adequate appropriation for the building of a hospital at Madison was the representation made by the social welfare organizations as to the great need of the hospital in the State." Our Commissioner of Public Welfare is well aware of the need of such an institution.

Obviously a single central hospital cannot meet entirely this need. There are transportation difficulties which we cannot avoid, but if we keep in mind the service already rendered by the Sanatorium for Tuberculosis, by the Orthopedic Hospital at Gastonia, the success of the single State-supported hospitals in Iowa and Michigan, and the sectional hospitals of Mississippi, I feel sure that we can promise an adequate return for the money invested.

The second question, namely, should the University add this very large sum to its already heavy budget, is a matter of very much greater importance than has been generally appreciated, and, I feel sure, should also be answered in the negative. It is not a function of an educational institution, a university, college, nor of the medical school itself, to build and maintain a hospital. As a matter of fact none of them except perhaps the most heavily endowed are doing it. In my paper presented to this Society a year ago I made the statement that the medical school should own its hospital. Our investigations have shown the error of this statement. The usual arrangement is illustrated by the Medical School of the University of Cincinnati. The University Hospital is supported by a direct appropriation from the City, which in 1922 amounted to $559,000. Neither

the Medical School nor the University has anything to do with the expenditure of this money. The Hospital has its own board of directors and its own organization. The University Medical School uses it for teaching purposes and for this consideration furnishes the professional service. The Medical School recommends the staff appointments and the hospital authorities approve. A similar arrangement exists between Barnes Hospital and the Washington University Medical School; between the Peter Bent Brigham Hospital and the Harvard Medical School, and others. There is no pooling of the resources of the hospital and the medical school and no joint budget of expenditures. The one is an eleemosynary institutiton, the other an educational institution, and the two should be entirely separate and distinct. If the Sanatorium for Tuberculosis had been placed at Chapel Hill instead of in the backwoods of Moore county (and so far as its purpose is concerned it might have been), its relation to the State Treasury would not have been altered, its support would have been provided just as it is now by a direct appropriation, but the medical school could have used it for teaching purposes without lessening in any degree its efficiency or adding one cent to its cost. The same may be said of the Orthopedic Hospital at Gastonia. As they are now located neither of these institutions is available for teaching purposes. When the State is willing to build a general hospital and will place it where the University can use it for teaching purposes the University can expand its present two-year school into a four-four school without assuming a serious financial burden.

The location of the hospital has been complicated by the proposal to use it for the purposes of a medical school. For the purpose of rendering a service to the people of the whole State there would be obvious advantages in locating it near the geographical center or the center of the population, but I doubt if either of these factors determined the location of any of our institutions already established. If placed in one of the larger towns so small a hospital might be very easily monopolized by the people of the particular community and fail altogether in its service to the people of the whole State. In my judgment this hospital could be placed in Chapel Hill just as well as in any other town, and serve its main purpose equally effectively.

For reasons already set forth, if the State is to have a medical school that will conform to the American ideal the location of the hospital at Chapel Hill is a matter of fundamental importance. We must emphasize the fact that we are not planning a medical school for the next five years, nor for the next twenty-five, but for as many years in the future as we care to count. An error of judgment now may be very costly in more than money in the future. And yet there has been an irreconcilable difference of opinion upon this phase of the problem. Many of our people and some national authorities have contended that we would be unable to assemble in a hospital located in so small a village as Chapel Hill the variety of clinical conditions necessary for proper teaching. Others have

objected on the ground that the University in undertaking to finance the proposition would find itself seriously embarrassed in carrying through the general development now under way. The latter objection has been reasonably answered. Let us now examine the first contention.

We should have in mind that the whole program centers upon the building and maintenance of a general hospital out of public funds for the people of the whole State. If such a hospital does not furnish the necessary variety of clinical material for the conduct of a Class A medical school the establishment of an ideal medical school under the control of the University cannot be undertaken and some other plan must be evolved. Every one seems ready to concede that we shall not have any difficuly in getting an abundance of chronic, subacute, and perhaps ambulatory patients. What an array of material for clinical demonstration and sound instruction would fall within this definition. Diseases of the heart, lungs, kidneys, of the gastro-intestinal tract and nervous system, et cetera. Many, however, are apprehensive that we would fall very far below the requirement in acute medical and obstetrical cases. In respect to the latter I have been assured by Mrs. Johnson, Commissioner of Public Welfare, and Dr. Bonner, of the State Board of Health, that there would be an abundance of obstetrical cases. Obviously there are a number of acute medical conditions that can never reach a central hospital, and the State cannot provide for them upon this plan. The question revolves upon the wisdom of attempting to establish a medical school depending upon the clinical facilities offered by a State-supported general hospital with its limitations, whatever they may prove to be. Granting that there may be very few of certain acute medical cases for a time, should this lead us into an attempt to establish a school which can never be quite as we wish it to be? Is there no way out of the difficulty?

First, I feel that our whole idea of teaching clinical medicine is undergoing a radical change. Most of our clinical teachers have undertaken to demonstrate the very rare clinical condition which demonstrates more his diagnostic skill than something the student should know about, or to demonstrate every possible variation in the disease-complex. Both are based upon entirely erroneous principles. The rare case has no practical value and it is impossible to demonstate every variation in disease conditions. A training which does not give the medical student the method of taking an accurate history, of eliminating the irrelevant and following up the diagnostic leads, of making a thorough physical examination and correctly interpreting the findings, falls entirely short in its purpose. A student not so trained will find himself at sea in a general practice irrespective of what he has or has not seen in the clinic. Can we not do effectively this character of teaching work on the chronic cases

Second, we are after many years coming to realize that a medical student's education is not complete when he receives a

diploma. He has merely laid the foundations upon which he may build a sound, comprehensive knowledge of medicine. His graduation should be followed by a hospital internship which will give him an opportunity to see the acute medical conditions under the most favorable circumstances. Ninety-five per cent of our students take an internship of one or more years now, and the hospitals everywhere are begging for interns. There would be no difficulty in securing hospital appointments.

Third. The universities of Iowa and Michigan are now conducting Class A medical schols with the facilities offered by State-supported general hospitals in relatively small communities. The University of Iowa and its medical school are located in Iowa City, a town of about 12,000 people. The hospital has a capacity of 450 beds, and is entirely supported by the State. The school has a splendid reputation. Three members of the committee, including myself, spent two days in Iowa City at the suggestion of Dr. Colwell and others. We found the general hospital very much overcrowded, and this had reached a degree that necessitated enlargement. Plans were being drawn for the building of an entirely new hospital with a total capacity of a thousand beds. The Rockefeller Foundation and the General Education Board have since that time made a donation of two and a half million dollars on condition that the State give a like amount. This is the strongest proof of the success of this school. Whatever may be thought of the possibilities of conducting a Class A school in a small town, Iowa has demonstrated the fact that it can be done successfully. Michigan has done likewise, and Wisconsin is setting out to do it. The towns in which these hospitals happen to be located, although somewhat large, relative to the size of the hospitals, make as little impression upon the character of the clinic or the teaching program as Chapel Hill would do. North Carolina can succeed with this program if she has the will.

In conclusion, and to present what I regard as a solution of the problem in concrete form, I suggest, not as an official of the University nor as the Dean of the Medical School, but as an individual:

1. The building and maintenance of a general hospital for the purpose of providing proper service for the people of the State.

2. That the hospital be placed under the management of a duly appointed board of managers.

3. That the hospital be placed in Chapel Hill in order that it may be used for the teaching of medical students at the University.

4. That the Board of Managers co-operate with the Medical School and the University in securing the fullest service both as a hospital and as a teaching institution.

5. If found necessary the University may require the intern year before granting a diploma.

DISCUSSION

Dr. Wm. deB. MacNider, Chapel Hill:

I think the subject was splendidly covered. I happen to be on that committee and I think that Dr. Manning's analysis is the correst one. If we are going to have a Class A accredited medical school in this State, which is to be recognized and supported in the first place by the authorities that be (and that is an absolute essential), and if that Class A medical school is going to have the backing of the whole medical profession in the State regardless of any sectional feeling, I believe that school must be at Chapel Hill.

Dr. Jos. L. Spruill, Sanatorium:

North Carolina is one of the most prosperous states in the Union, and it has gone ahead by leaps and bounds in every other line. This thing must come. There is no getting away from it. North Carolina can maintain a medical school as well as any other state, but we have numerous difficulties to solve in regard to it. I believe that we shall solve them sooner or later, but unfortunately the geographic situation is against us. Chapel Hill, in the center of the State, is a long way from a vast population. So far as having an obstetrical department and getting material for it from illegitimate cases, that seems rather far-fetched when we think of some in Cherokee and some in Currituck—a long way to travel and no money to spend. But it is coming, and we might as well make up our minds to solve the problem. I should like to see Dr. Manning's paper endorsed by the Society as a whole and not by this Section alone. However, I have just a little criticism to offer. How long since you have been at Sanatorium, Dr. Manning?

Dr. Manning: I have not been there.

Well, I just want to tell you that I resent your calling it the backwoods. (Laughter.) We have no woods at all, no pine trees—we are in the peach section. And we are not even in Moore County; we are in Hoke County, across the line. We are not in the woods, but I think the Doctor brought a good point there. He is perfectly correct. Sanatorium is isolated more or less, and rather hard to get to, yet it is full all the time, crowded with patients. If it could have been forseen to place the Sanatorium at Chapel Hill and to put the Orthopedic Hospital at Chapel Hill, and add other medical institutions there, we would have had a medical center at the University.

Upon motion of Dr. R. McBrayer, seconded by Dr. Spruill, the Chairman appointed a committee to confer with the President of the Society in order to have Dr. Manning's paper presented before the Society as a whole. Committee: Drs. R. McBrayer, H. H. Dodson and L. J. Smith.

Dr. W. L. Dunn, Asheville:

I trust that this Committee will use every bit of pressure that can be brought to bear to have an open and free discussion on this subject in a general meeting. To my mind there is nothing so important for the future of the medical profession in this State as the ultimate disposition of this question of a department of medicine in the University of North Carolina.

The standard of ideals of the profession in the State of North Carolina is going to be set for all time by the medical school in this State. We all feel very deeply and keenly on this subject and I think that discussion can be well left to the general meeting. I think that it is one of the most important things that can be brought up at the general meeting of this Society. I think we ought to be excused for bring all sorts of pressure to bear on the Society as a whole for an expression, rather than have that of a few isolated individuals who may be governed by idealism or local interests or what not. Let's get the sentiment of the profession.

Dr. Manning, closing the discussion:

I just want to correct a possible misapprehension as to what was said about illegitimate children as a source of obstetrical material. It is true that in Iowa they were admitting only that class of cases for years, but since then they have made provision for legitimate pregnancy. I do not want to imply that the obstetrical service of this hospital would be restricted to the illegitimate, although there are a great many of that unfortunate class of people now without any place to go. I know personally of several who were sent to an institution in Greenville, S. C., under the control of the Salvation Army. We have only four small maternities to take care of these people, and admission may be obtained with great difficulty and for more money often than they are able to pay.

THE X-RAY AS A DIAGNOSTIC AND THERAPEUTIC AGENT

Robert H. Lafferty, M.D., Charlotte

To the untutored mind any agent using electricity is very apt to be surrounded by a glamour of mystery. From this arises the danger of its being used by the quack and charlatan to fake the gullible public. Instances of these are too numerous to mention. Abrams' wonderful (?) Oscilloclast is one very much in the public eye at present.

Those of us who have devoted our lives to the study and practice of roentgenology are constantly on guard against its use in any but a very scientific and conservative manner. The physician practicing roentgenology should be treated as a consultant and, I may say, a consultant who is using a very important and useful diagnostic agent as well as a dangerous one. The x-ray is dangerous in two ways—first physically, for damage may be done if it is not properly used; and, second, it is dangerous in that it may be mis-

leading unless the proper conclusions are reached in a proper manner. The radiograms are shadow pictures and are easily distorted and the wrong impression produced.

I desire in this brief essay to call your attention to certain points that will enable you to secure better results from radiological studies and thereby more benefit for your patient. And, at the same time, I wish to show you certain uses and limitations of the x-ray. I shall strive to lean toward the side of the conservative.

It is often interesting to see the idea which patients have of x-ray—due very largely to the referring physician. They are referred for an "x-ray picture" and not for an x-ray examination or x-ray consultation, or a radiographic study. So it is no wonder the patient thinks all we have to do is to "take a picture" and then we can show him everything from a tickling cough to a pain in the side. Then the patient says: "Dr. So-and-So sent me for a picture and you charged me for a picture, so I want the picture to take to him so he can see what my trouble is." We have a hard time explaining that we are not running a photographic gallery, and that while we do make what is sometimes called a picture, it is simply a means of arriving at a diagnosis and often represents a very small part of the evidence, for the fluoroscopic examination is frequently of the greatest importance and all of this must be taken in conjunction with the clinical evidence. The physician does not lower his standing with his patient by taking the report of a roentgenologist. Intelligent patients not infrequently say: "My doctor wants the picture, but he won't know anything about it when he sees it." But I would like to say just here that every roentgonologist is glad to discuss a case and study the plates and reports with the referring doctor.

The making of the radiograms is the smallest part of an x-ray examination, notwithstanding the fact that a surgeon recently said to me: "I do not know anything about making an x-ray picture but I know all about reading one." Personally, I would rather have the opinion of a skilled radiologist on a poor plate than a perfect plate and the reading by a novice. And when you add to an expert interpretation a careful fluoroscopic study by one who sees many cases daily, then you are getting an examination that is worth while.

The clinician doing his own radiographic work daily meets the temptation to use the x-ray not as a consultant, but as a booster of his diagnosis already found, and as a means of proving to the patient his diagnostic ability and acumen.

As a diagnostic agent the value of the x-ray is fully established, but we must remember that it has its limitations. Its earliest use was in bone conditions, and the study of fractures is probably the easiest, though often presenting to the trained roentgenologist many problems and fine points overlooked by the casual observer. On the other hand, bone tumors and various bone diseases embrace one of the most difficult fields of roentgonology.

The next step in its development was the diagnosis of urinary calculi. We can recall the interest with which we once viewed the radiogram of a urinary calculus either in the kidney or bladder. Today we are able to show 95 or 96 per cent of the kidney and ureteral stones, and possibly even a larger percentage, by radiographing with the opaque ureteral catheter in the ureter.

One of the most frequent disappointments of the roentgenologist is in the examination of the gall-bladder. The radiographical diagnosis of a diseased gall-bladder may be made, but a very careful examination and much experience is needed, and a great majority of the cases are diagnosed by the associated signs rather than by simple radiograms of the gall-bladder area. I feel that many of the gall-bladders that show stones are causing less trouble than the ones giving other evidence of disease. I believe it is Dr. John B. Deaver who says: "If all the symptomless and undiagnosed gall-stones were to rattle simultaneously in church some bright morning it would break up the service." So when a patient is sent in for a "picture" of the gall-bladder, the chance of locating the trouble is very slight, whereas if he is sent in for an x-ray study of the gall-bladder, it would require study by radiagram and fluoroscopy of the gall-bladder and surrounding organs, both without and with the barium meal. Even then the percentage is not as high as we would like and as we hope later to make it.

When we turn to a study of chest conditions the roentgen ray gives us much valuable information. The size of the heart and vessels, the mediastinum, the condition of the pleura and lungs, all may be studied by radiogram and fluroscopy. Diseases of the lungs will often show even before the physical signs are entirely clear, and localization of foreign bodies in the bronchi and lungs certainly justifies its use.

The examination of the gastro-intestinal tract presents so many problems it is hardly possible in this short time even to mention them. For this examination, of course, a meal containing barium or bismuth must be used in order to see the outline of the tract. Fluoroscopy is of untold value in this examination, since it shows the tract in motion. An intelligent examination requires at least twenty-four hours, and more often forty-eight or seventy-two, though very often patients are sent in with the request that the examination be made and the patient return in an hour. The referring physician forgets that this is a study of the entire tract in situ and in action without outside interference. There is such a close interrelation between the different portions of the alimentary tract that it may be very misleading to examine just one part, and certainly the radiogram alone, without fluoroscopy, is also very apt to give misleading evidence.

We have often had patients sent in for an x-ray examination of the uterus and ovaries. This, of course, is neither possible nor necessary. In very large women the differentiation between tumor and pregnancy may be made, the fetus beginning to show from

four and a half to six months. The injection of gas into the peritoneal cavity through the uterus to determine the patency of the tubes and to show tumor masses is of value in selected cases.

In the head, the examination of the teeth for foci of infection, and the study of the nasal accessory sinuses and mastoid and the sella turcica are all of great assistance. Not many of the brain tumors can be shown directly, though often indirect signs can be observed, and the injection of air into the ventricles by the expert brain surgeon may assist the roentgenologist in locating a tumor.

As this comparatively new adjunct of medical science develops other diagnostic uses may be developed, and as the surgeon and clinician assist us by conferring with us relative to the confirmation or error of our findings we shall become more and more expert in asociating our observations.

Now for a few moments let us notice the x-ray as a therapeutic agent, (I must necessarily be very brief.) Those of you who have seen a burn caused by x-ray are forced to admit that it is a powerful agent and an agent that must be handled with the greatest care. In using it in the treatment of disease even greater care must be used than in administering our powerful drugs. The proper dosage at the proper time must be administered in order to secure the best results, and there are many factors that must be considered.

As with any other physical agent, and especially one using electricity, many claims have been made of beneficial results in many conditions. First let me mention a few of these, neither to condemn nor to recommend more than a fair trial, for in this list hardly sufficient cases are yet on record to assert positively. It is said that chronic sinusitis, discharging ears, whooping cough, and osteomyelitis respond to a certain type of treatment. Others claim good results in producing osteogenesis in delayed union of fractures. In many other conditions the x-ray is recommended but in which we have not tried it.

May I mention now a few conditions that we know from some years' experience do yield favorably to x-ray treatment? I do not claim perfect results in every case, else you would be fully justified in classing me as a faker. We have as yet no agent that is a perfect specific. *We know* that a great many of the chronic skin lesions respond favorably to the ray—as acne, eczema, psorasis and carbuncles. *We know* that epitheliomata generally yield to the proper radiation, though it is frequently better to use a combination of curettement or dessication and x-ray. *We know* that a great many of the toxic goitres can be cured by radiation with no danger to the patient. *We know* that 95 per cent or more of the metrorrhagia cases with or without benign tumor yield to radiation. *We know* that tuberculous adenitis yields wonderfully to radiation. *We know* that application of the proper rediation to diseased tonsils causes an atrophy of the excessive adenoid cells, giving splendid clinical results—but we do not pretend to remove the tonsils.

When we turn to the discussion of the treatment of malignant tumors by radiation, I must say that the advent of the massive machine giving the short wave lengths has added vastly to our hope for good and permanent results. Without stopping to give the reasons, but following the best work of the best thinkers and most conservative men, we feel that the wisest and best method is to give a thorough preoperative radiation followed by surgery and a thorough postoperative raying. Certainly our results will warrant this even if many cases will not be permanently cured. Even in the hopeless cases the progress is delayed and the pain lessened. Let us hope that by concerted action, early diagnosis and thorough raying before and after operation we may decrease the cancer death-rate.

THE TRIAD IN THE DIAGNOSIS OF SYPHILIS

James A. Keiger, M.D., Greensboro

The part that syphilitic infection plays in the morbidity of a community is of no slight consequence. When we consider the infection among "innocent" wives and children, we are profoundly impressed with the importance of diagnosing and treating the disease at the earliest possible moment and thus preventing the spread to those members of society who cannot protect themselves. The sanatorians believe that syphilis is the one disease whose dissemination can be most easily prevented. By the use of one or more injections of arsphenamine the patient can be rendered noninfectious for the time being, but not cured. Yet treatment cannot, and should not, be instituted until the diagnosis is certain. No person should be branded a syphilitic unless he be one.

To arrive at a correct diagnosis we must use the means at our command. The triad of findings in making up our decision are:

1. The history of the case as given by the patient.
2. The physical findings by the physician himself.
3. The report of the laboratory technician.

In syphilis, as in other diseases, sympathetic listening and sympathetic questioning, together with careful examination, will put the facts before us. It will depend upon the stage of the disease as to the history the patient will give. In primary cases there will be definite dates of exposure, ranging from two to six weeks. As a rule chancres are single, though they may be multiple, and are not very painful, unless there be a mixed infection. On examination the typical lesion, in my experience, is covered with a grayish exudate or pellicle and shows induration when palpated. The glands in the groin may be enlarged, but seldom are very tender. The typical lesion may show simply an erosion with no infiltration, or may show chancroidal characteristics. It is for this type that we need the laboratory. The dark field is the method of choice, since the Wassermann may not become positive until later. According to

Craig, of the Army Laboratory, positive findings in chancres are as follows: First week 36.3%. Second week 59.3%. Third week 68.9%. Fourth week 77.2% Fifth week 81.3%. We conclude from these facts that the blood test is of value, but a dark field is preferable when it is possible to have one made, for we get 100% positives providing the lesion has not been treated with various antiseptics.

The diagnosis in the secondary stage is not quite so difficult as in the primary, for the patient will give a more definite history. He will have had a lesion which healed slowly and following this the appearance of a rash. Also he may complain of headache, sore throat, falling hair, loss of appetite and general malaise. Careful physical examination will reveal a recent scar, a florid or fading rash, general grandular enlargement, possibly mucous patches, falling hair and usually slight temperature. If the laboratory reports one, two, three or four plus, it is well to consider such cases positive. Hagen reports positive Wassermann test in 96% of secondary cases. The physician must exercise his judgment in the remaining 4%. If the history and physical findings are sufficient to warrant a diagnosis of syphilis, then treat such cases as syphilitics, relying on the therapeutic test to confirm our suspicion.

Now, passing to late or tertary syphilis, we find the problem somewhat different. Whereas in primary and secondary cases the community was in danger, it is now the individual who is wounded and in need of help. The symptoms given may suggest any one of a number of diseases encountered in daily practice. Such complaints as rheumatism, headache, general debility, heart trouble, ulcerations, loss of hair, difficulty in locomotion, failing memory and, in women, abortions or miscarriages, should make us think of syphilis. As in primary and secondary cases, the physical examination should be carefully and painstakingly made, noting more closely the condition of the reflexes and the reaction of the eye to light. If the history and physical findings are suggestive of syphilis, I think it is well to confirm the diagnosis by means of the Wassermann test, blood and spinal fluid.

Having thus far considered in a general way the triad in the diagnosis of syphilis, let us now take up more in detail the laboratory test. I do not believe in relying on the Wasserman entirely to make a diagnosis, but I do like to have my suspicions confirmed by it. In my practice I consider a two, three or four plus reaction as positive. A one plus in a patient without any evidence of infection calls for another test. If still one plus then I give a provocative. Following this, as a rule, the test will either be negative or jump to a two or three plus.

It is well to remember that a number of things can cause a false reading. No specimen should be examined if the patient has been drinking, and no specimen should be allowed to become contaminated with bacteria. And, too, the druggists prescribe for a great many patients in whom we get false negatives. There are a

few patients, according to some writers, who persistently give negative reports. It is a good rule to follow, I think, when patients, clinically, are syphilitic to treat them as such.

There are many things yet that could be said regarding the diagnosis of syphilis, but time will not permit. But I may add in closing that, when once the diagnosis is made, the treatment should be thorough, over treatment if such is possible, rather than under-treatment.

DISCUSSION

Dr. H. L. Brockmann, High Point:

Dr. Keiger's paper in my opinion, from a general and a laboratory point of view, was quite thorough. I was associated with Dr. Keiger in Greensboro for some time and I have known him to follow out these methods with great good and satisfaction in caring for his patients.

The matter of spinal fluid examination I think is of great importance in following up old cases that have been standing for years and show some nervous manifestitation of syphilis—cases in which one cannot get a Wasserman test positive from the blood. I would add to the Wasserman test the examination of the spinal fluid for globulin and pleocytosis, which confirm, if anything, the Wasserman findings.

Dr. R. McBrayer, Sanatorium:

I believe that one statement Dr. Keiger made might get some one in trouble. Three or four per cent of the far advanced cases of tuberculosis that come to us at Sanatorium give us a two plus Wassermann reaction, and if Dr. Keiger's teaching goes out as he gave it, a large number of patients will get salvarsan and mercury though they have not syphilis at all. As these improve their Wasserman reaction drops to one plus, and on further improvement they show negative reactions. We usually get a larger percent of one plus than two plus and with improvement they become negative.

Any man that uses this laboratory procedure ought to know more about it than the average man knows. Dr. Shore's technic in cases of known syphilis will not give you four plus or three plus Wassermann reactions every time. It is not delicate enough to do so. Other technics are more delicate and will give you one hundred per cent positive reactions in syphilis, and some are so delicate that they will give you plus three and four in non-syphilitics. These should be known to men who are trying to decide what these reports mean, though I have not the slightest criticism of Dr. Shore's work.

Question:

If a patient comes in showing a three or four plus Wasserman and it has disappeared, by the ruling of the State Board of Health

what would be the opinion as to how long he would be infectious; how long should treatment be given for primary lesions after healed?

Dr. Keiger, closing the discussion:

I do not know that I can answer the question about the patient's becoming non-infectious. That is rather difficult. He may be non-infectious after one injection and he may not be. It may be ten years before he gives forth a germ. The only thing I can say is to give plenty of treatment in order to kill all the germs you can. Let's get away from the impression that six doses is sufficient. Tell them that eighteen doses is enough to cure and that a negative test after three or four injections does not mean much.

In regard to positive reports in tuberculosis, I am glad to hear Dr. McBrayer say that he has some. Dr. Hazen, of Washington, reports positive tests, but says that in doing it himself he notices there is just a little difference in the amount of reaction, that the appearance is different. In North Carolina I believe that we can rely on the State Laboratory of Hygeine. If I get a three or four plus reaction in a patient who has tuberculosis, I treat that patient for syphilis, but I take another test after the first injection in order to be sure that the patient is a syphilitic.

SOME MODERN CLINICAL LABORATORY PROCEDURES OF VALUE TO THE GENERAL PROFESSION

H. L. Brockmann, M.D., High Point

My greatest interest in medicine, aside from diagnosis and treatment, is the study of the general function and application of modern medical science, and this interest is always apt to color anything that I might say before an audience likely to share it.

In the field of internal medicine—the diagnosis and medical treatment of disease—I have found the laboratory to be of such vast significance that quite naturally many questions have presented themselves to me regarding the proper place of the clinical laboratory in the rapidly developing practice of the profession of the present day in North Carolina. It is not for me to present claims that the laboratory can in any way replace physical examination. It is consideration of the fact that the most effective method of practicing medicine includes history taking, physical examination, laboratory study, and often special investigation by means of the fluoroscope, the roentgen ray, the cystoscope, and perhaps other measures, which leads me to seek the proper use of the laboratory and these other adjuncts by those engaged in the general practice of medicine.

Each of you has felt his way as you have gone along as to your attitude toward these things, and will naturally continue to do so. I can but recount my own experiences and my mental reaction to

them. As an undergraduate it was a rather hopeless attitude when, in reading the literature, I would pass over references to laboratory, roentgen ray, and other facilities, access to which in the practice to which I humbly aspired I saw no hope of attaining. Hopeful, useful and practical, on the other hand, is my present attitude, since I have learned that one cannot practice medicine satisfactorily without access to modern methods; that by co-operation among medical men facilities are within reach of all; and that the public is clamoring for just these things.

It is my specific purpose in this paper to call attention to the common laboratory tests which are of most value in the practice of medicine, both those tests long used and some of the newer tests with which my experience has made me acquainted. The practice of internal medicine, which cannot be satisfactorily done without the laboratory, is rapidly gaining ground at the present time. However, it is not alone the specialist in this branch of medicine who should make use of laboratory methods. Every medical man in any specialty should be able to perform and interpret certain simple laboratory tests, and should further know of what use all other important laboratory procedures can be to his patients, so that he might have these tests performed elsewhere when there is need for them

There are being instituted here and there in our State modern clinical laboratories under proper management. We shall soon find that such facilities are accessible and that they are of considerable use. These laboratories, to meet the requirements, must be under the direction of trained men capable themselves of executing any test carried out in them and of interpreting the results from a broad clinical point of view. There has been a tendency over the country to leave this very important part of medical practice too much in the hands of technicians. The error of this cannot be over-emphasized. The technician in the laboratory can be of as great use to the doctor in examining specimens and making diagnoses there as the nurse can be to the doctor in examining, diagnosing and treating patients at the bedside. The profession of the laboratory technician will eventually be as distinct as is that of the trained nurse; but it will remain the function of the doctor to practice medicine—to diagnose and direct the treatment of disease—in the laboratory as well as elsewhere.

Men in general practice vary in their individual interest and ability in doing laboratory tests and in the time they can devote to them. In general I think it would be well for everyone to make simple blood counts and urinalyses. Also everyone should be able to make blood smears on glass slides to be mailed to and examined by trained pathologists for malaria, pernicious anemia, leukemia and the like; to collect blood for the Wasserman and Widal tests; to send proper specimens of urine for special examinations; and to send specimens of tissue, sputum, and other material to the laboratory. Such simple procedures are within the scope of every practitioner.

We all recognize the difficulties of practice in the country districts. Such work often requires great skill. It is well if in general practice one knows how to avail himself of the facilities accessible to him. There must be a greater co-operation between the hospital, with its diagnostic and special treatment facilities, and men doing general practice, for hospitals are coming to be medical and diagnostic as well as surgical, and work done there cannot be done elsewhere. In this statement I refer to our section of the country, where we have been inclined to use hospitals chiefly for surgical cases. There are men now who devote practically their entire time to hospital work. Such practice is largely dependent upon work referred by the general practioner. The hospital man must therefore satisfy both the patient and the doctor who referred the patient.

We have, among the valuable tests which are done in the laboratory, many, such as the Wassermann and the Widal tests, with which everyone is familiar. There is insufficient time in which to give these detailed consideration now but this is a good opportunity to emphasize the ease with which anyone can have these and other tests performed when indicated.

Basal Metabolism—Of clinical tests which have recently gained recognition as of unquestionable value, the determination of basal metabolism is among those of importance. By way of definition: "The basal metabolic rate of an organism is the minimal heat production of that organism, measured from twelve to eighteen hours after the ingestion of food and with the organism at complete muscular rest." With the modern forms of clinical apparatus by which this is determined, the minimal heat production or basal rate of metabolism is calculated from the amount of oxygen consumed. This determination is readily made and clinically is at present used almost altogether in the study and treatment of disorders of the thyroid gland. Stated simply, in hyperthyroidism the rate of basal metabolism is almost invariably increased considerably above the normal; and in hypothyroidism, lowered below the normal. It is of great help in differential diagnosis in indefinite conditions such as neurasthenia and chronic nervous exhausion, which are suggestive of hyperthyroidism but have no increased metabolic rate. In cases of hyperthyroidism with exceptionally high metabolic rate the risk of operation is considerably greater; and preliminary treatment with rest, roentgen-rays and possibly ligation are to be considered. Further, the basal metabolism is an index to the effect of this treatment and is probably a safer guide than the clinical picture. Periodic determinations should be a routine in the management of these cases.

In hypothyroidism and myxedema and cretinism, which are accompanied by a decrease in metabolic rate, the determination indicates when sufficient thyroid extract has been given to produce a normal rate of metabolism and what daily dose is needed to maintain it at that level.

Blood and Urine Chemistry—It is not yet practicable for the general practitioner to undertake chemical analysis of blood and of urine, excepting simple tests such as for albumin and sugar. And yet there are a number of such examinations which are of great benefit in determining the treatment and prognosis of many cases. This is particularly true in respect to patients with kidney disease, with or without high blood pressure and with diabetes. It is now well recognized that the amount of albumin and casts in the urine is not an accurate measure of the work which the kidneys are performing; that the signal for real alarm is the accumulation above the normal of urea nitrogen, uric acid and creatinin in the blood, or the failure of the kidneys to eliminate sufficiently substances such as phenol-sulphonephthalein when injected intravenously or instramuscularly. These tests represent to us more nearly than any we have so far adopted the work which the kidneys are performing. In a similar manner blood sugar determinations reveal diabetes mellitus at times when there is no sugar in the urine; and the amount of sugar in the blood is always significant in the diagnosis and treatment of diabetes mellitus. Likewise the measurement by weight of sugar lost each day in the urine is important in the treatment of this disease.

In the treatment of impaired kidney function and of diabetes mellitus it is well for the patient to have these examinations made in the laboratory at the outset, and afterwards to care for the patient at home, with an occasional visit to the laboratory for the purpose of measuring the progress of the disease.

Protein sensitization tests with extracts of pollen, food, hair, feathers and such substances have, in my opinion, not yet been proved of sufficient value and made sufficiently simple to justify the general practioner in attempting to use them. Thorough inquiry into hay fever cases and cases exhibiting paroxysms of bronchial asthma and other evidence of hypersensitiveness to some particular undiscovered substance is timeconsuming and often of little avail. If relief for these patients is not obtained by the means which experience has taught to be the most effective, I believe that it is better that further examination into the cause be made in the laboratory.

Tissue Examination—The microscopic study of tissues in cases of suspected malignancy and other pathological processes is being pursued with more and more frequency. From accessible pathology small specimens may be removed and mailed to the laboratory. These should be promtly fixed and mailed in a two to four per cent solution of formaldehyde, which is the same as a five to ten per cent solution of stock formalin. There are now rapid methods of preparing tissue for microscopic examination so that a report can be given in a day or two after the specimen is received, whether frozen section or paraffin section be the method pursued.

Typing for Transfusion—The typing of blood for tranfusion is a very simple procedure which is indispensable when blood is to be transferred from one person to another. As blood transfusion is

usually done in the hospital and is not often resorted to in general practice, it will probably remain in the province of the hospital man to keep on hand the typing sera and to do this test. We may remember, however, that neither the test nor the transfusion is difficult in the hands of one accustomed to the work.

Urine Examinations in Pyelitis—The urine in cases of pyelitis sometimes shows pus on gross examination and, by its turbidity, also bacteria. Exact methods, which are much to be preferred, consist in obtaining urine, uncontaminated, by aseptic catheterization of the bladder, or, with the aid of the cystoscope, of the ureters. The causative bacteria may be identified by centrifuging, staining, and making cultures from the sediment.

The functional capacity of each kidney is likewise determined separately by catheterizing each ureter and measuring the output of phenolsulphonephthalein, after intravenous injection of this.

Transduodenal Irrigation of the Gall-Bladder is a practical and safe procedure which we have found helpful, in connection with other measures, in the diagnosis and treatment of gall-bladder disease. We have found it easier to insert a small duodenal tube by way of the nostril.

Miscellaneous—Examinations of gastric contents, of feces, sputum, pus, and of smears for gonococci, are everyday tests of practical value.

Throat smears and cultures are often the only means of positively identifying diphtheria, and should always be resorted to for the confirmation of this diagnosis. It is not meant, however, that antitoxin should be withheld when the case is clinically very suggestive of diphtheria. We have found many cases of Vincent's angina which would not have been recognized had stained smears not been made.

The recognition of the spirocheta pallida in smears of serum taken directly from syphilitic sores, either under the dark field microscope or on stained smears, is not a difficult matter for one accustomed to the microscope. The value of this is easily understood—in the diagnosis of syphilis it is of infinitely more value than the Wassermann test.

Autogenous vaccines from furuncles, acne lesions, sputum in chronic bronchitis, urethral discharges in non-specific urethritis and prostatitis, and other sources, may readily be prepared in general clinical laboratories. Such vaccines are recognized as superior to stock vaccines, and the difference in expense is small.

The examination of spinal fluid for cells should be done immediately upon withdrawal of the fluid. Examinations for globulin and sugar are simple. These tests are exceedingly helpful in the diagnosis of such conditions as syphilis of the central nervous system, tuberculous meningitis, lethargic encephalitis, and meningo-

coccus and other forms of meningitis. Wassermann tests of the spinal fluid as well as of the blood are efficiently performed at the State Laboratory of Hygiene at Raleigh. The colloidal gold test of the spinal fluid, which when positive indicates general paresis, is carried out in very few if any laboratories in this State.

DISCUSSION

Dr. L. J. Smith, Wilson:

Not being a general practitioner I hesitate to discuss this paper, but there is one thing that impressed me immensely. As an illustration, a young physician of our County told me recently that he had never taken the temperature of a patient until after he had graduated. Another physician brought me, as a specimen, a blood smear for malaria, with the two slides stuck together, the blood being dried between the two glasses. It seems to me that no greater service could be rendered than the printing of a brief outline giving exact information how to prepare and send specimens to the laboratory. I believe that our general practitioners are more ignorant on this subject than any other subject with which we have to contend. The paper is very interesting and helpful.

Dr. C. A. Shore, Director State Laboratory of Hygiene, Raleigh:

I think Dr. Smith's suggestion that the State Laboratory of Hygiene send out a leaflet of instructions is a good one, and we are now preparing a new pamphlet to take the place of that previously sent out.

Dr. Brockmann, closing the discussion:

There is a little textbook gotten out in England entitled "The Link Between the General Practitioner and the Laboratory." This covers about fifty pages and is quite well adapted to use over there but is is a bit confusing for us on account of different methods of handling mail and different facilities which we have in North Carolina. I think it would be fine for the State Laboratory of Hygiene to get out a little booklet or pamphlet regarding the technic of collecting and mailing specimens for laboratory examination, and something of the practical value of these tests. It occurred to me also that, in connection with the extension courses in medicine given under the direction of our State University, the application and practicability of standard laboratory tests might be emphasized.

The subject assigned to me is so vast that it is impossible to cover it except in a very cursory manner. With reference to Dr. McBrayer's remarks on the precision of the Benedict Portable Metabolism Apparatus and similar instruments, these instruments, which are generally adopted for use in small hospitals, base their results altogether on the amount of oxygen consumed. I have had very little personal experience with larger instruments which also

measure the amount of carbon dioxide given off. Very acceptable authorities who have used both forms of apparatus state emphatically in their literature that differences in results are inconsequential, that readings given by instruments which measure both the oxygen consumed and the carbon dioxide exhaled are for all practical purposes the same as readings given by those which measure only the oxygen consumed. I think that here again the University of North Carolina can help us out when we have established there, as we should, a four-year medical school with a hospital and laboratory in which the best forms of all such instruments may be compared and recommendations made to us.

DELIVERING A MESSAGE OF HEALTH TO THE PUBLIC

R. L. Carlton, M.D., Health Officer, Winston-Salem

Doctors, more than any other class of persons on earth, should be interested in teaching to all people the simple truths about the care of our bodies. It should be the aim of every doctor to teach many who do not now have that knowledge how to live and to awaken and increase the interest of those who do possess such knowledge. Physicians realize, as no others do, how small is the number of people who really know how to take care of themselves and how many there are who take no heed until they become ill, perhaps past all hope of recovery. Then, "All that a man hath will he give for his life."

To be well—to have good health—is of first importance in the life of every one. If we expect to be happy, to prosper, to be of any importance to the State and Nation we must consider that our health is wealth—that it is our greatest asset.

The greatest cause of poverty is sickness. Sickness is an expense both in loss of time and money. This is seen in the cost of maintenance of hospitals, clinics, boards of health, etc. It is seen in the expense incident to keeping children in school a longer time than would have been necessary but for sickness. It is seen emphatically in the tremondous cost of sickness in industry, where millions of dollars are lost annually through illness.

The losses from sickness must not all be calculated upon a money basis. Dr. Darlington, former Commissioner of Health of New York City, said: "In order that any state or nation may succeed, its citizens must be upright, with high ideals, and have within themselves the restraining influence of a moral education; for what abiding happiness can there be in a state where the standard of morality is low? So it is of even more importance to family life and to the nation that the young shall early receive proper guidance and training. In this respect the loss of a mother by premature death is worse than all else. Think of what the child misses who has never been taught to pray at the mother's knee, who has never known the smile of mother love, her tender watchful care, her gentle chiding and her restraining influence! These things can-

not be reckoned in dollars and cents—they are incalcuable." With this I am sure we all agree.

"We must all die; but the date of our death is largely of our own making. Premature death comes from sickness or accident; and most people die prematurely," said a recent prominent writer on the importance of health.

The knowledge which physicians have acquired along these lines is being used more now than ever before to aid others—to prevent illness. The physician of the future will concern himself as much with the prevention as with the cure of disease.

Since it is a fact that prevention rests largely with the people themselves and that many of them do not know how illness can be prevented, not being familiar with how diseases spread, or how the body may be bult up to resist disease, or how to prevent the entrance of disease germs into the body—then it becomes our duty to teach them health.

This duty devolves not only upon health departments, health officers and boards of health but upon every physician, be he specialist or general practitioner. And this does not mean "State Medicine" nor the cutting off of the income of the physician, for by his teaching the people the proper care of their bodies and the consequent preservation of their health and the prevention of diseases he will in so doing increase his clientele and his income as well.

The fundamentals to be taught are that for one to keep well he must know something of how diseases originate and to watch for the beginnings of disease; that the health of children at birth largely depends upon the care and health of the mother; that some agencies produce disease directly, as pneumonia germs, while others predispose to disease, as the carrier of pneumonia germs who becomes too tired or gets cold and develops pneumonia; that some races of people are more apt to be attacked by certain diseases than others; that direct injury, accidents, are too often due to carelessness, lack of thought; that there are physical or external causes of disease, such as changes of atmosphere, insanitary conditions, poisons, etc.; that germs are responsible for most diseases and that while they may attack us through several channels many of them are destroyed after they enter our bodies; that many diseases are slow and insidious in their onset; that each part of the body is dependent upon the working of the other parts; that weak organs must be guarded; that it is of the greatest importance that every one who is not himself entirely familiar with the human body and how it works should be occasionally examined by a physician or a group of physicians to determine if every part of the body is working normally or if there is any disease beginning.

If these are minimum fundamentals regarding health which the people, the public, should know, and if the prevention of illness does depend upon the people themselves, are they ready to be taught,

will they co-operate to the extent of making the practical working out of such a scheme possible? We contend that the public is ready for such work and if given an opportunity will co-operate to an extent hitherto undreamed.

An example—there is a North Carolina community which seven years ago spent for public health work about $12,000. This amount paid for city physician, one nurse, sanitary inspector and two or three part-time employees. In that community no opportunity has been lost during the past six years to inform the public regarding matters of health. The people became interested; they responded; they instructed their governing bodies to give them more facilities pertaining to health, with the result that appropriations were increased year after year. The 1922 appropriation was $50,000, which paid a staff of twenty-one full-time health workers and three part-time. Incidentally—has such expenditure paid? One item—the death rate--is the answer. In 1917 the death rate per 1000 was 25; in 1922 it was 12.6.

Another eexample: Tuberculosis in this same North Carolina community was ten years ago causing deaths at the rate of 310 per 100,000. There was no systematic effort being made to fight disease or to greatly enlighten the public concerning the proposition. Now that same community knows something of the menace caused by tuberculosis and is supporting a real anti-tuberculosis progrom which calls for clinics, doctors, nurses, hospital beds, Modern Health Crusade classes, special assistance to undernourished children, etc. How has this come about? The story of the sale of tuberculosis Christmas seals in that community last year will probably best answer such a question. During the entire year the public heard something from time to time, through newspapers, bulletins, letters from the department of health, and through doctors and public health nurses, of the work of the tuberculosis clinic in its examinations of persons who had been exposed to tuberculosis and of those who for any reason found an examination necessary and of the discovery of cases not previously recognized, etc. The public had been hearing of work done with schoolchildren in Modern Health Crusades and nutrition classes and of the corrections for school children of certain defects which might be predisposing to this dread disease. No regular systematic bombardment of literature or publicity was used, but enough educational material was released in the various ways mentioned to keep the public alive to the fact that there was a division of tuberculosis in the Department and that its services were available to all citizens.

Toward the close of the year a more or less intensive campaign of publicity was carried on for a few weeks somewhat as follows: Three pieces of literature bearing directly on this proposition were published. The first one was entitled "What a Tuberculosis Program Means to this Community." It was a very simple discourse upon the disease, its dangers, how the right sort of program would

enable people to avoid it, etc., and ended with half a dozen human interest stories of persons who had been reached and helped during the past year. This booklet was mailed to some 2000 citizens.

A second folder was entitled "What Did You Do With My Money Last Year?" This mentioned the receipts for the previous year and exactly how the amount was expended-nurses, Crusade material relief, educational material, sputum cups, supplies, milk, etc., and on the opposite page set forth the estimated amount needed for continuing and enlarging the program for the coming year. This was mailed to some 3000 people and was also published in two daily papers.

The third piece of literature read "Ten Reasons that Mean Much to You." This folder was purely educational. It mentioned the number of tuberculosis deaths, the estimated number existing cases, the fact that tuberculosis caused more deaths in that community than did seven other communicable diseases combined; the school children in nutrition classes and those in Crusade classes trying to learn good health habits; the cost, so far as it could be estimated in dollars, to the community by tuberculosis cases and deaths; the results which had been achieved in the past few years by a program against the disease; the fact that a falling death rate was largely due to the active cooperation of the people themselves, etc.

This folder was sent into at least 5000 homes.

In addition to this literature and various articles in the newspapers the same information was presented in talks to the leading civic clubs, to women's clubs, to churches and Sunday Schools. In brief, the public of that community at the close of 1922 knew more facts about tuberculosis and especially of the disease as a local propostition than ever before.

Did they respond? Did they show a readiness to receive such a message of health and to cooperate with those persons trying to drive away the menace? The answer lies in the amount received from the sale of Christmas seals. The community five years ago gave $600 to this cause; they were asked this year to give $6600 and actually turned in a little more than $7100.

Is the money they gave the entire answer? It is not. I am happy to say to you that this community, which less than ten years ago had a tuberculosis death rate of over 300 per 100,000, had in 1922 a tuberculosis death rate of 149 per 100,000.

We submit that the public is ready to be taught the message of health, that it is willing to pay for such teaching and that the people will co-operate.

This rather long drawn out narrative does not mean that every doctor should engage in a game of publicity or compaign such as may be put on by a department or board of health. It

is contended, however, that doctors in general are only touching the edges of the proposition so far as bringing the message of health to the public is concerned when they practice curative medicine only. There is a larger field, just as interesting, touching more nearly the ideal, and meaning much more to both physicians and people generally when the public is being taught health and that health is that quality of life which renders the individual fit to live most and serve best.

DISCUSSION

Dr. L. J. Smith, Wilson:

I would like to ask one question. Where is that community? I have guessed already, but Dr. Carlton's outline of his methods is certainly worthy of consideration by every physician and health officer in North Carolina. I have listened very intently to what the Doctor said and it is my purpose to try to copy some of his ideas.

Dr. W. F. Hargrove, Kinston:

Our County of Lenoir is putting on an intensive health campaign and we have been going on for quite a while. Dr. Mitchener came down and made an almost house-to-house campaign, or school-to-school campaign, among white and black, and then another campaign. Last year the doctors got together and with the State Board of Health decided to put on a great health campaign, literature and everything to get to the people. Last fall we started delivering sixteen lectures a month at sixteen points, in the schoolhouses, churches and various other places in the County. It has been going on up to the present time without a break. A few of the places felt so little interest that we couldn't get anybody, but other places were a little more enthusiastic. The better schools and communities were more interested, but the ones more backwoodsy didn't want information and we don't know how to get to them. We have done all we can with the assistance of the Laboratory at Raleigh and our Health Office and Board of Health. Our campaign winds up next August, a year's campaign. We were trying to reach every man, woman and child in Lenoir County, about 30,000, but up to the present it is disapointing. I should like to know how we can get them. We have done everything we could. We have drummed them up with our nurses and got the teachers to try and interest the people in lectures, and we have driven twenty miles to get there and be there on time, but it is a slow process. Education is the slowest process in the world. I should like to know what kind of community the Doctor has gotten into. We can't get the people. Perhaps we are not sufficiently attractive, but all I can say is that we did not get what we anticipated.

Dr. Carlton, closing the discussion:

I have nothing to add except to say that the people in my

community were just a little bit more ready than the ones the Doctor speaks of, and we got results.

Dr. Lapham:

This paper is not rightly named —it should be called "Come over into Macedonia and Help Us." People will not listen to us and we have not the nice community described by Dr. Carlton, which we very much wish for.

PUBLIC HEALTH IN HIGHLANDS

Mary E. Lapham, M.D., Highlands

Highlands is a small village high up in the Blue Ridge Mountains, at an altitude of 3850 feet, with such singularly pure air and water that good health would seem to be almost obligatory. In 1922 Miss Harry the Red Cross Public Health Nurse stationed in Highlands, and I made a rather thorough examination of the school children in Highlands and six adjoining school districts. We found that 60% of the school children had enlarged tonsils and adenoids, 16% abnormal lungs, 12% abnormal hearts, and 67% had worms. Miss Harry had several dental clinics under the charge of a good dentist at various times during the year so that the teeth were pretty well attended to. Thanks to her untiring efforts, the State Board of Health sent to Highlands in the fall of 1922 an equipment of doctors and nurses and the tonsils and adenoids were removed from more than 70 children. This was not as large a number as should have been reached, but a surprisingly large one when you remember that there is a great fear of these operations and a great prjudice agaist them among our mountain people. The results of these operations have been so satisfactory and the parents so impressed by the improvement in their children that the next time the opportunity is offered there will be a great eagerness to accept it. The parents are especially pleased with the marked increase in the ability of their childrn to learn and the teachers comment upon the improvement.

At the end of the school year 1922, the records showed 470 days absence from school on account of illness. Tracing out the causes of this disastrous loss of school opportunities, we found that it was almost entirely due to acute infections of the upper respiratory tract, the nose, throat, trachea and larger bronchi. We also learned that in the homes of these children there was associated with their illnesses a noticeable loss of working efficiency in the parents from these same infections. Not infrequently the father lost two or three days work and sometimes much more, because he was not able to work. The parents complain bitterly about the schools being a hotbed of infections, a breeding place for colds, and almost regret that their children have a school to go to. It has been abundantly proven over and over again that one child will bring an acute infection which will spread all over the school and from thence all over the community. From the time school

opens until it closes the village is hardly ever free from colds, and one wave has hardly passed before another comes along and swamps us. The same is true of flu, which is only another name for colds with a tendency to settle down into pneumonia. The other day a whole family was down with flu, two in a bed and four in a room and no one to care for them, and a mile or so away were two other families in precisely the same condition. There were three cases of pneumonia in one family from this flu infection, and everybody going blithely on cheerfully spreading this infection as far as they could. How long will it be before the father of a family will be protected against the loss of weeks of earning capacity on account of our carelessness in permitting these infections to spread? Last summer flu was brought to us right in the height of the season. Soon one family were all down in bed and three members of a visiting family living next door in a boarding house came down with it, because the first family had not been quarantined and the children brought it to their mother from playing with the other children before they came down with the flu. Then I was called in promptly established a strict quarantine, without any authority to do so and against the protests of the outside family sick in the boarding house. Not a person was allowed to leave the quarters assigned this family in the boarding house, where forty dinners were served daily; all the supplies were carried to them and left outside in the hallway; the village family was strictly quarantined and not a single case of flu developed after the quarantine was established. This past winter no attempt was made to quarantine and the village was thoroughly swept by flu to its heart's content. I wish the State Board of Health would give me as public health officer, the authority to quarantine against flu and make it obligatory for all families suffering with flu to report it to me as Health Officer. Now no reports are made, there is no way to know when flu starts in our midst, and it goes its way, costing much suffering, money and even death with not the slightest attempt made to protect us against it. We should protect our schoolchildren and the community against these acute infections by having each child carefully observed by its teacher as it passes into the schoolroom, and if there is any evidence of a cold or sore throat that child should be sent home to its mother with a note explaining the reason for its being kept at home. A village ordinance should also be passed making it an offense punishable with a fine if such a child is allowed away from home until passed upon by the public health nurse or the health officer. Colds, sore throats, bronchitis and flu have no more place in our schoolrooms than measles or whooping cough. It would be interesting to try thorough measures for a school-year and see if the number of days absence could be cut down from 470 to something like a reasonable number.

In these mountain schools many of the children are unfit to learn. Their minds are dull, their attention and interest cannot be aroused, they do not study and only wait the hour of their release.

Many of these children present the saddle-back nose, the dull, heavy face, the vacant look so characteristic of an imperfect metabolism of iodin and the formes frustes of hypothyroidism. It would be well worth while to do as they are doing in the North and give this type of thick-skinned, thick-witted, heavy, dull, children of legarthic temperament regular doses of iodin at regular periods during their school-life, and see if these fires could not be made to burn a little brighter by thus aiding the thyroid in its work Many of these mentally deficient children are restless, do not sit still, are continually scrubbing around in their seats. They do not apply themselves and apparently cannot but turn their heads and eyes continually this way and that, waiting impatiently for their release. Sometimes the cheeks are a little too red and the line around the mouth may be too white. Sometimes the mother says that the child does not sleep well, is restless and cries out. In the Highlands school and the six adjoining districts, Miss Harry and I found that over 60% of the children had worms and that often whole families were infested. The microscope shows a shocking condition of these children with infestations by Ascaris, Oxyursis, monads, and one case of trochocephalus dispar, but no hookworms. If only these children were infected by hookworms it would be easy to get the parents to co-operate for their removal, but with round worms "Oh, nonsense," says the mother, "I always had worms when I was a child and they never hurt me." This is precisely the point, and one underlying many important consequences. Because the parents had worms and survived, there can be no wrong. These parents have no conception of their own inferiority, no conception of the possibility that if their childhood had been properly cared for their brains and health might have been very greatly improved. Our mountain people are mentally deficient and we are all the time breeding up a race of citizens who, instead of being alert and ambitious and progressive, are mentally and physically inferior and quite content to hand this inferiority on to their decendants. We see among our people a dull, apathetic, helpless indifference and willingness to believe that endurance is their only lot which is more characteristic of an animal than a human being. Drawing a circle eighteen miles in diameter around the village of Highlands, you will find the school children unworthy of their school privileges, and 60% of them are well loaded up with worms.

We hurled ourselves on the hookworm and tore them out root and branch because we were taught that the hookworm was responsible for the laziness and indifference of its hosts. We shrug our shoulders even as do the parents and say that round-worms and oxyurids do not harm, that children have them. "Ephraim is wedded to his idols, let him alone". You may take enough interest to ask, "Well, if you are so rabid about worms, why don't you get rid of them? Can't you give them a vermifuge? Can't you drive out these worms?" Certainly we can. But what if we do? How long will they stay driven out when the hogs and the dogs and the cats

and the children are equally unconscious of the advantages of a privy? In the yards of the village of Highlands liberty is safely enthroned, and no "uppity" health officer had better meddle with the sacred rights of the family to have their yard as dirty as they please, not even the Public Health Nurse, whom everyone trusts, can persuade them to build a privy.

It is quite possible that the medical profession is not sufficiently conscious of the possible harm that round-worms can do. It is also possible that if the attention of the profession could be roused as it was for the hookworms great good might result. One day a man came to beg me to go to his mother, who was dying with typhoid. Asked if her doctor knew that I was coming, he said that the doctor would not go back because there was no use, the woman was dying and nothing could be done. We found her with a temperature of 103, pulse 120, respiration 36, skin mottled, dusky red, and wet with heavy sweating. She was semi-comatose, semi-delirious, the abdomen distended, no rose spots (for it was too late, she had been sick six weeks), and bloody urine dribbling from an over distended bladder. After using a catheter and ordering cold sponging there seemed little else to do, and we went into the next room to see a girl of fourteen who also had typhoid. Her temperature was also 103, but something about her looks prompted the use of santonin and a number of worms responded to the call.

Struck by the coincidence, we gave the grandmother santonin, and in a week after the worms were passed she was incredibly better.

A woman of twenty-eight was threatened with convulsions. There she lay on her dirty bed in her dirty cabin, jerking and twitching, moaning desperately, semi-delirious, while the filthy children and the gaunt hollow-eyed husband stared helplessly at her. Her bowels had not moved for three days. There seemed to be no harm in adding santonin to the calomel, so it was tried and in three days the woman was free from typhoid." This whole family was rotten with worms, and no hookworm could accomplish greater devastation of character and health than the round-worms had in this family of poor white trash. The father tried to work, wanted to, but the children or the wife or himself were always "ailing" and little could be earned. Higher up on the mountain was a skeleton of a boy of fourteen, high-colored, almost uncovered cheek bones, deep eyes way back in his head, a pulse of 120, weight 90 pounds, and a big, blowing systolic murmur in a stretched-out heart that explained why he could not go to school or walk without almost suffocating. In the village, in a family of unusual intelligence and in unusually good circumstances, the mother sent word that her daughter aged fifteen was down with the "fever". She had nursed many a case and knew the signs well but this case puzzled her, although it had the right smell, which is what makes the diagnosis for our people. Purple cheeks,

labored breathing, head and backache looked like typhoid, but santonin said no, it was worms, and when the elder brother came down in a few days the mother did not bother anyone but gave him santonin with the happiest results. A baby two years old would stretch out as far as possible on its mother's lap, turn a sickly, livid, ashy color, and look as though it could not live, while its limbs grew cold and the face sank into a lifeless expression. A celebrated professor of medicine in one of our greatest colleges happened to be in Highlands and saw the case with me. He did not make a diagnosis and said there was no chance and no use in doing anything. The stools had been repeatedly examined with negative results, but on this day, when even whiskey and heat seemed powerless to revive the baby, another search was made for ova and one solitary egg was found. Santonin had previously been given , so now Frey's vermifuge was tried and the worms were passed. Typhoid cases are often complicated by worms in the mountains around Highlands that it has seemed questionable to me whether or not many of our long drown out cases were not primarily prepared for typhoid by the worms and then the recovery complicated by them. I have had cases of typhoid and pneumonia which failed to make a good recovery until a worm had been passed, when improvement would begin at once. It is probably that so long as the worms are in good condition they do not do so much harm, but, that if they die and are not expelled they cause a severe intoxication? We know that high temperatures are apt to cause expulsion of worms and that they are often dead when expelled, and it has seemed to me that this coincidence was too marked to be purely accidental. I have seen a good many cases of what looked like meningeal irritation, and two cases were typical. A young man twenty-one complained of severe backache and pain in the occipital region, with such a stiff neck that he could hardly move his head. His eyes were dull and vague, the cheeks purplish, temperature 104. He was never still an instant, but tossed continually and tried to raise himself up to the sitting position. He became delirious and hard to control so that morphin had to be given, but even when drugged he was hard to keep in bed. The diagnosis of typhoid had been made but not proven, and on the second day of his delirium a certain white line round the mouth suggested that it would be well to try santonin. After the worms were passed recovery was prompt. This attack was similar to, only worse than, many other of the same nature which had literally ruined his life because they were perpetually interfering with his work,. About every two or three months he would begin to feel badly, and could not eat or sleep. Then his head and back would begin to ache intolerably and for a week or ten days he would suffer excruciating pain in the occipital region, with such a stiff neck that he could not sleep or stir. After these attacks were over he was not fit to work for a week or more and so he stumbled over his worms month after month until finally a regular course of vermifuge treatments permanently abolished them and he has never had an attack since.

Six weeks after her baby was born, a woman became wildly delirious and they sent for me thinking there must be something wrong in the pelvis. I could not find anything wrong and was greatly puzzled to account for the temperature, the dusky cheeks the incessant twitching and jerking, the restless, rolling eyes and the head that perpetually turned this way and that. We tried to bring down the temperature by sponging and wet packs, but after two hours faithful effort it occured to me that this was characteristic of worms, that the temperature could not be reduced by cold water as it could in acute infections, so we gave doses of vermifuge and chased the worms out and she was all right in a few days.

A woman came staggering into my office and fell gasping into a chair. "Doctor give me something quick, I'm dying," she said, so I gave her something very nice which I happened to have and which did her a great deal of good. She was five feet eight inches tall and weighed only 95 pounds; her sunken eyes and skin, stretched like parchment over her high cheek bones, gave her a ghastly appearance. She had only 30% hemoglobin, the temperature was 96, pulse very weak and irregular. There was so much pain in the stomach, and had been for months, that cancer seemed very probably and the absence of hydrochloric acid in the gastric contents seemed almost conclusive. She was evidently starving, so I persuaded her to stay in Highlands where she could be fed and cared for. She did not improve as she should, and, strangely enough, as she began to gain in weight and strength she begain to fuss and to feel badly, and lost her passivity. I was getting all out of patience with her hysteria and her thankless response to my efforts, when her husband brought two of their six children in to see her—such a looking husband and such looking children, the very trashiest kind of white trash that could be found. They lived down in a deep cut in the mountains, very inacccessible,, and lived on almost nothing but corn and pig meat and coffee and tobacco. Were they clay eaters? They had the dirty skin, but they said they did not eat clay. The whole family had worms. The starved woman could not feed herself but she fed twenty-eight worms.

A man of fifty-five said his doctor had told him he was dying of kidney trouble. He was so short of breath that he could walk only with difficulty and was too weak to work. There was quite a little albumin in the urine but no pus or casts. Total quantity for 24 hours, 700cc. There was a loud blowing systolic murmur at the apex and the heart was enlarged. Pulse 96, temperature 97, hemoglobin 40. After getting rid of the worms he began to steadily improve, the albumin disappeared, the tone of the heart muscle became stronger and there was no murmur. He has not lost a day' work for two years now.

A man fifty, well-to-do, unusually intelligent and ambitious, had been miserable and of no account for two yaers. Blood

pressure 95, hemoglobin 40. His wife had queer spells, his children were always ailing. They had come in to the examination of the school-district children, and the microscope showed that the whole family was infested with worms. A little farther down the creek there was another family equally infested and equally degraded by worms. Wherever we went the microscope told the same story. Then we began to wonder how far this state of affairs extended. Do the eighteen miles which we covered enjoy the unique privilege of raising these worms, or are the surrounding districts also involved? It would be interesting to know just how far this condition prevails.

I wish a campaign could be undertaken against these pests as it was against the hookworm. Five years from today I would like the children of these schools to show a clean bill of health, to be the jolliest, sturdiest and the most mentally alert lot of school children that you could wish to see. The Public Health Nurse, aided by the State Board of Health is most capably handling the teeth, tonsils and adenoids, but she is helpless against these worms.

If the State Board of Health could send someone to us to study this state of affairs, and to convince you that we are right, perhaps the hookworm would not be the only pebble on the beach which you would think deserving of your attention.

DISCUSSION

Dr. C. A. Shore, Raleigh:

I shall speak of only one phase of this very interesting paper. Reference was to the possibility of these worm infections being evenly distributed throughout the State. I believe that the infection with the different intestinal parasites is very unevenly distributed. When the Rockefeller Hookworm Commission conducted its great hookworm campaign in North Carolina the State Laboratory of Hygiene helped them in the examination of many of their specimens. We found that there were great differences in the percentage of infection in neighboring counties and even in closely neighboring communities. These differences were found in such counties as Wake, where the physical and social conditions are fairly uniform, but the contrasts were much greater in the mountain counties. Several years ago the United States Public Health Service doctors resident on the Cherokee Indian Reservation in Swain County sent us specimens from all the Indian schoolchildren. We found that practically one hundred per cent were infected with intestinal parasites, and most of the children were hosts for more than one kind of worm. The heaviest infection was with the dwarf tapeworm (Hymenolepis) while the third in number was the hookworm. Even this third in the list was found in twenty-five to thirty per cent, as I remember it. There are many sections in the mountains where we are unable

to find any hookworm infection, but I think the Ascaris is fairly well distributed.

Dr. L. J. Smith, Wilson:

One phase of the Doctor's paper that I was very glad to hear was to the mistake in diagnosing round-worm infection as typhoid fever. I was very much impressed on one occasion by a case similar to that which she described. I made a positive diagnosis of typhoid and it was running a typical course, it seemed to me.

When the mother told me that she saw a worm pass I said that we would give her treatment, and in like manner after santonin was given she had an evacuation of round-worms and the typhoid diagnosis went to the wind.

Dr. W. F. Hargrove, Kinston:

The first recollection of my boyhood is when my grandmother came once a year and brought to us children, to our horror castor oil and jerusalem oak seed and proceeded to "worm" the family and the negroes on the farm. I believe they have it in an imported oil now instead of the old-fashioned seed mashed in molasses as we had it, but it was effectual for hookworm. We didn't know then what hookworms were, but it was effectual.

Going back a few years, when Lenoir County put on the hookworm campaign, Dr. Strosnider was sent to our County and made a school-to-school campaign as well as in the field, lived out there and moved around. He found our country infected with both round and hook-worms, and very heavily infected in places. He gave free treatment in capsules of thymol. I suppose he put thymol in every house in the County, and it was there a year afterwards, still on the shelf unopened. Now, what are you going to do about such a thing? I want to know how the Doctor managed to get it in them. I called a surgeon to see a child where the obstruction was such that I didn't know what to do. It was Dr. Albert Parrott and he said that it was not an operative case. I used santonin and calomel. The next day fifty-five round worms came, and when I got back, expecting to take the patient to the hospital, she was up eating and having a good time.

Dr. Lapham, closing the discussion:

There is no trouble in getting them to take it—it is chocolate-coated and nice. But what good does it do? You can get rid of the worms. Miss Harry and I practically never failed, but when you get rid of them what about it? What are we going to do when we have no authority for hygiene and sanitation? We have no malaria in our country, nor hookworm, so we are not as bad off as we might be, but I would like to trade a few of these worms for something else!

SURGERY

Chairman: J. W. Gibbon, M.D., Charlotte

HARELIP AND CLEFT PALATE CONSIDERATIONS

(Chairman's Address)

James W. Gibbon, M.D., Charlotte

No surgeon who has had much experience with this work will deny that cases of harelip and cleft-palate are difficult to handle properly. There is no group of cases in which good results are more important, or in which bad results show so plainly. Harelip and cleft-palate are congenital deformities due to a failure of union of the embryonic processes entering into the formation of the lip and palate, and, at birth, there is sufficient tissue to compose a normal lip or palate. It is therefore important to keep in mind that these deformities are not due to an absence or lack of tissue, but simply to a separation of the normal parts.

A. Time and Sequence of Operation—The first and most important consideration in the treatment of harelip and cleft-palate is the time when operative treatment should be begun, and the order in which the respective deformities should be repaired. Some judgment must be exercised in the selection of this time.

(1) *Condition of Child*—In the first place, the general condition of the child must be good, and severe cases should be under the care of a pediatrician for a period prior to the operation. The child should be gaining in weight, the hemoglobin should not be below 85%, and the bowels should be regular. The determination of the size of the thymus gland is considered by some surgeons as important, since to operate in the presence of an enlarged thymus may result in the sudden death of an otherwise healthy infant. If enlarged, one x-ray exposure is thought sufficient to reduce it to normal size. If examination of the urine, etc., shows evidence of an acidosis, sodium bicarbonate is given in frequent small doses for several days before the operation. If care and thoughtful discrimination are exercised in the selection of the time of operation based on the condition of the infant, the mortality is not high, two or three per cent. It therefore is most essential that the surgeon insist upon the child's being in suitable health and nutrition, if his results are going to be good and the mortality rate low. These cases should all be in the hospital a few days before the operation is done.

(2) *Age of Child*—The second question relating to the selection of the time for operation is the question of age. How soon after birth should operation be advised? In very extensive cases of deformities, in which the question of nourishment was a matter of vital importance, operation has been done within twelve hours after birth. However, in the majority of cases, it is the better plan to close the lip during the third or four month, and later, between the

eighth and ninth months, complete the palate. Roberts believes "Delay in starting the operative treatment of clefts in the oro-nasal partition longer than the first two or three months is an error of judgment, and it should not be postponed except in the mal-nourished." Ritchie maintains that the lip operation may be done as early as possible compatable with the condition of the child. New thinks to attempt closure of the lip before the third month is to render the operation decidedly more difficult technically without any relative advantage.

(3) *Sequence of Operative Procedures*—The sequence of the operative procedures, as above suggested, is first close the lip and alveolus by the third or fourth month, and later, between the eighth and tenth months, close the palate. Embryologically, union of the parts composing the lip, alveolus and palate begins first in the lip, and from thence union procedes backward until the tip of the uvula is the last portion united. So the surgeon, by first closing the cleft in the lip and alveolus when the baby is still quite young, before the bones of the face have hardened and become fixed, and then waiting four, five or six months before attempting any operation on the palate, pursues a course which is in accordance with natural development, and when the time comes for the palate operation he will be greatified to find that the cleft of the palate has materially narrowed during the intervening months.

Early operation, when suitable to the condition of the child, has another advantage, besides that of restoring the parts as nearly as possible while the structures of the face are soft and pliable. Experience has shown that the young infant stands these operations much better than the older child, as they have a very poorly developed sense of pain and the shock is very little. The shock in the older child is of a much more serious extent than in the little babies. This seems strange, but it is a fact.

B. Harelip—(1) *Principles*—In the treatment of all forms of harelip there are certain points which must be observed. First, tension must be thoroughly relieved by separating the lip, cheek and nostril from the underlying bone. In some instances it is necessary to carry the undercutting outward under the cheek for a considerable distance in order that the edges of the cleft may be brought together without tension. The margins must be freshened in such a way that the "raw surface on either side is of the same length" and the surfaces to be approximated should be as broad as possible. The denudation of the margins of the tissues should be planned so that when the suturing is done the sutured line will be slightly longer than the length of the lip, thus allowing for subsequent shrinkage. Notching in the vermilion border is to be avoided by leaving a slight excess of mucous membrane in the form of a small projecting teat. Every effort should be made to bring up and secure in place the flattened nostril, so that it will resemble its normal fellow. Blanching of the tissues when the edges are approximated means that the sutures are tied too tightly or that the ten-

sion has not been relieved properly. It is unnecessary to apply any of the various methods devised for relieving tension on the suture line—adhesive strips, metal springs, etc.—if the operation is properly performed (Davis-Plastic Surgery). Roberts believes the inexperienced operator uses too much restraint in these operations, and remarks that "the cheeks will furnish sufficient musculocutaneous material free from strain, if freely incised and liberated from the underlying bone."

(2) *Premaxilla Projecting in Single Complete Harelip*—When the cleft in the alveolus is narrow, the lip may be closed over it, and in due time union will occur. In a child with single complete harelip and a projecting intermaxilla, the bone must be brought into place and wired with or without partial fracture.

(3) *Premaxilla Projecting in Double Complete Harelip*—In double complete harelip with a projecting premaxilla it is essential never to remove the bone, and this deformity always presents an especial problem to the surgeon. If the prominence is not too great it may be possible to close the lip over it. If it projects like a snout and closure is impossible, some method must be used to bring it back, so that the soft parts may be closed over it. There are several ways of effecting this reduction of the premaxilla. It may be accompanied by pressure, or, if this fails, a fracture of the bone with pressure may succeed. In other cases a wedge-shaped piece of cartilaginous septum may be removed submucously, the bone pushed back and fixed and the alveolar arch completed. Great care must be taken not to remove too large a wedge, else completed lip and alveolus will present a very ugly flattening effect. Victor Veau, a French surgeon, has recently shown how the cosmetic results may be further improved by simply cutting through the neck of the premaxilla, instead of removing a wedge-shaped section from the septum.

C. Palate—(1) *General Operation*—In the repair of cleft-palate the factors of most importance are: First, the height of the palatine arch; second, the amount of soft tissue (mucoperiosteum) between the alveolar border on each side and the margin of the cleft; and third, the comparative width of the cleft. Naturally the higher the arch and the narrower the cleft, the easier it is to close the defect. The most generally popular method of closing cleft-palates is the edge-to-edge approximation based on the Langenbeck operation. Mucoperiosteal flaps are raised on the two sides of the cleft; these repaired at the cleft margin and sutured. In some cases the turn-over-flap method of Lane may be employed in conjunction. In very wide clefts, the two-stage method of Thompson serves well. The front half of the hard palate is repaired by sliding an elongated tongue flap over the cleft and suturing it to the elevated flap on the opposite side. After union has occurred, the posterior half of the hard palate and the soft palate are repaired by freshening the edges and suturing the flaps edge to edge. Another method useful in very wide clefts of long standing is the "two-stage-edge-

to-edge method." At the first operation the flaps are raised through small lateral incisions, and the space between these and the bone packed snugly with iodoform gauze, and left for five or six days. It is remarkable to what extent the flaps may be lengthened by this method. Also, as a result of more or less reaction, there is an increase in the blood supply. At the next operation the flaps are pared at the cleft margin and sutured. I am having nothing to say of the operations of Brophy and Blair, chiefly because, except in the hands of these two men, they do not give good results and are not popular.

(2) *Blood Supply*—In the closure of cleft-palates there are certain very valuable factors to be observed. First, every effort should be made to preserve the blood supply. Dissections, therefore, must be carried out so as to avoid injury to the larger vessels. The blood supply of the hard palate is derived from the two divisions of the posterior palatine artery, a branch of the internal maxillary. The larger vessel passes down the posterior palatine canal and emerges from the posterior palatine foramen, which is internal to and behind the last molar tooth in the adult, and the last premolar in the infant. It runs forwards in a groove on the inner side of the alvelor border of the hard palate to the anterior palatine canal, situated near the midline just behind the incisor teeth, where the terminal branch of the artery passes forward to anastamose with the nasopalatine. The smaller branch of the posterior palatine artery sends branches to the soft palate. Besides these, the soft palate is supplied with arterial blood from the inferior palatine artery, branch of the facial, and ramifications of one division of the ascending pharyngeal artery, smallest branch of the external carotid. It is in making the lateral incisions that the largest trunk passing between the anterior and posterior palatine foramina, sending its branches medialward under the palatine mucosa, is extremely likely to be divided or split. After a smart hemorrhage due to such an accident, the flap on the corresponding side will usually be observed to be quite blanched and ischemic, a state which is clearly a precursor of non-union. The lateral incisions, therefore, should be made as far out as possible in order to avoid injury to the posterior palatine artery. Blakeway advises that the incisions be directed outward against the alveolus rather than upward against the palate. Likewise, in making incisions near the posterior border of the soft palate, the ascending palatine may be divided, a vessel of considerable importance in the nourishment of the soft palate. It is well said that much less depends upon the method of suturing the flaps than on the adequate blood supply. Some surgeons avoid the use of the lateral incisions because of this imminent danger to the blood supply. Or, if incisions must be made, they are placed after the mucoperiosteal flap is raised, and at points of evident tension, and are then only very small nicks. George V. I. Brown thinks the advisability of lateral incisions is, after all, a simple surgical problem. If there be sufficient tissue to permit accurate approximation when periosteal flaps are formed, then there will be no need for

lateral incisions. When this cannot be accomplished without tension, lateral incisions must be made to give the necessary relief, or otherwise the parts will slough and pull apart.

(3) *Relief of Tension*—The relief of tension on the sutured line is the final and most urgent factor in the repair of cleft-palates. This is accomplished chiefly in two ways. First, by the use of the lateral incisions, just discussed. These should be small, well away from the area traversed by the palatine arteries, and directed outward against the alveolus. Next, a most valuable method of relieving tension is the plan of separating the hard palate from the soft palate by the complete division of the aponeurosis joining the two. This is easily done, and frequently gives a very generous amount of relaxation to the flaps. It should never be omitted.

Summary—In summarizing, permit me to again state that, before any form of operation is started upon these deformed little infants, the condition of the patient must be good; that the proper age at which to begin the work is between the third and fourth months; that the lip and aveolus should be completed first, and then several intervening months be allowed to elapse before the palate is closed, usually about the ninth or tenth month, thus following nature's own plan of union; that every effort be made to relieve tension in the lip by free separation of the lip, nose and cheek from the underlying bone; that the blood supply of the palate be most scrupulously preserved by careful placing of lateral incisions; and that tension is lessened by the complete division of the palatine aponeurosis.

CASE REPORTS OF SOME UNUSUAL CONDITIONS

Henry Norris, M.D., F. A. C. S.
and
Robert Hope Crawford, M.D., F. A. C. S.
Rutherfordton

The histories of the following cases have been briefly abstracted because they are of rather unusual interest and of sufficient rarity to warrant putting them on record.

(Case 1). J. W. W., male, age 49, eight years ago had severe attack of what was considered dysentery, when he passed a considerable quantity of blood and mucus. There followed a period of five years of complete health, then he began to have indigestion. This has persisted and has been accompanied by colic-like pain in right abdomen from one to two hours after taking food. This pain has increased in frequency and severity and with it there has been a passing nausea. Three days before operation abdomnial pain became general and was accompanied by nausea. The next day vomiting occured, and bowels did not move in spite of heavy purgation.

When patient came to the operating table, May 5, 1916 the picture was that of a complete intestinal obstruction. Through a right rectus

incision, the jejunum was found intussuscepted for a distance of four inches. The gut was angry-looking and at the apex of the intussusception there could be palpated a small mass. Reduction without traction was accomplished and the mass was determined to be a rounded tumor arising from the inner wall of the intestine and filling its lumen. The basilar attachment was too broad to admit of excision of the tumor alone, so enterectomy and vertical anastomosis was done. The patient made a smooth recovery and has reported himself several times as being in perfect health.

Pathological Report—Specimen consists of a portion of intestine, measuring 7 centimeters in length. One margin is free; the opposite one is slightly infolded and the lumen is obstructed by a solid mass. On opening the bowel the growth is seen to be attached to one margin. The tumor measures 3.5 centimeters in length by 3 centimeters in width. It is covered by mucous membrane which is intact throughout. The tumor has caused almost complete obliteration of the intestinal lumen. On cross section the mass is solid, homogeneous, and white in color.

Microscopic Examination—Cross section through the tumor shows a mucous lining which is preserved in part; in many areas the glands have undergone destructive changes. In these situations there is such inflamatory reaction and the mucosa, as well as the tissue beneath, is infiltrated with leucocytes. There is a narrow band of tissue separating the mucosa from the underlying parts. The tissue here is composed of cells, spindle in shape, the nucleus taking a deep stain, the protoplasm drawn out forming interlacing fibrils, which is a homogeneous material taking a faint blue stain. This tissue extends into the muscular coats separating and destroying the fibers; the individual fibers are seen traversing the myxomatous areas.

Diagnosis—Myxoma.

(Case 2, R. W. H., Male, age 50, admitted 3-19-23, discharged 4-5-23. Two years ago patient began to have slight pain extending across his upper abdomen, which was more severe in the mornings. He did not worry much about his condition and continued his usual work of farming. Patient's bowels were very constipated and frequently he was obliged to take cathartics. Two weeks ago, after taking a large dose of oil, he experienced severe pain in the upper abdomen; and since then he has passed small amounts of blood and mucus in his stools. On admission examination was negative except as follows: Abdomen: The abdomen is soft and pliable, no muscular rigidity. In the left upper quadrant at the site of the splenic flexure of the colon, a mass the size of an oragne is readily palpable. Paristalis good. Roentgen films of the gastro-intestinal tract show a filling defect in the descending colon near the splenic flexure and corresponding to the position of the tumor mass.

A diagnosis of a benign tumor of the descending colon was made and operation advised.

On opening the abdomen through the outer border of the left rectus, a mass of intussuscepted gut presented itself. The descending colon near the splenic flexure was intussuscepted for four inches of its length. The

gut was liberated with some difficulty and the tumor was easily palpated within the lumen of the colon. A vertical incision was made through the wall of the descending colon and the tumor mass and a portion of the intestinal wall were excised. The incision into the colon was closed transversely with catgut. Careful examination of the abdominal cavity failed to reveal any further trouble and the abdominal wound was closed in the routine manner. Convalescence was entirely uneventful.

Pathological Report—Macroscopic description: Specimen consists of a portion of the intestine which has been hardened before coming to the laboratory. The specimen measures about 7 centimeters in length. One extremity shows the ordinary normal intestine; at the other end the mucosa is thickened to about four times its normal dimensions. What appears to be a large ulcer about 2 centimeters in diameter is also present.

Histologic Description: Section through the thickened portion shows this thickening to be limited to the mucous membrane, the remaining layers being normal. No definite neoplastic tissue can be recognized, the tissue being normal with a thickened inner coat.

Pathological Diagnosis: Polyp of the large intestine, gangrene.

This case is of interest because a diagnosis of benign tumor was made prior to operation.

(Case 3). Mrs. J. L. T., admitted 1-2-23, discharged 1-24-23. Previous history has no bearing upon present condition. During July, 1922, patient had complete loss of appetite with a continuous bad taste. Food was repulsive to her and she often felt nauseated at the thought of it, but did not vomit. Two weeks after the onset of these symptoms patient had rather severe pain in her right lower abdomen and acute appendicitis was suspected by her family physician, but in a short time the lower abdominal symptoms cleared up. Late in July patient noticed that her stools were black and tarry continuously. After three weeks they became more normal in color. In August her appetite returned after a visit to the mountains, but when she got back home the same old symptoms reappeared. She lost a slight amount of flesh, her color became paler and she was slightly jaundiced. In December patient was admitted to the hospital with a hemoglobin of 30 per cent. Transfusion was at once done. The hemoglobin was increased to 55 per cent after the transfusion. Examination of every stool revealed occult blood. After transfusion patient felt so much better that she insisted on leaving the hospital, but in a few days began to go downhill again. She was readmitted to the hospital on January 2, 1923. A complete study was made of the gastro-intestinal tract with negative finding, except for occult blood in the stools. In view of this, an exploratory operation was advised and accepted.

On opening the abdomen, a large tumor mass was palpated on the lesser curvature of the stomach. The pylorus was thickened but the lumen was not diminished. The tumor apparently sprang from an old healed scar of an ulcer. A transverse incision was made into the anterior stomach wall and a tumor about the size of a small organge was exposed. This was dissected out and removed in toto from the stomach wall. The mucosa was stitched together, covering over the raw surface and the incision in

the stomach wall was closed in the routine manner. Further careful exploration of the abdominal cavity failed to reveal any other pathological condition.

Convalescence was uneventful. Macroscopically, the tumor was benign and on section it was found to be composed entirely of muscular and fibrous tissue. Since operation patient has been entirely well.

In this case the chief points of interest are that though the patient had had a gastric ulcer that was evidenced by the scar, no history of such was obtainable. Second, that the x-ray failed to reveal this tumor, probably because exposures were made while the stomach was entirely filled with the barium meal.

(Case 4). R. J., age 7 years, male. Previous history negative. Admitted September 26, 1913. Three days prior to admission he was seized with a sudden severe pain in the right lower quadrant of the abdomen, was treated for acute appendicitis for three days by his family physician, and was then sent into the hospital for operation.

On admission the child was well nourished and of normal size, temperature 99, pulse 118, respiration 28; abdomen was distended and quiet. A tumor mass was visible on the right side of the abdomen and level with the umbilicus, very tender on palpation. Diagnosis of appendiceal abscess was made and immediate operation advised. Before the abdomen was opened it was realized a mistake had been made, as the peritoneum was normal in appearance. On entering the abdomen a large tumor about the size of an infant's head was encountered, which we at first thought sprang from the right kidney. After freeing the adherent colon which lay on top of the tumor it became evident that the growth was a pancreatic one, springing from the head of the pancreas. With considerable difficulty the tumor was removed, and the abdomen closed. The patient was very badly shocked and died in eight hours after operation.

Pathological Report—Specimen consisted of a tumor mass which measures 15 x 15 x 9 cm., weighing about 650 gms., and having the shape of a human brain. The external surface is surrounded by a thin fibrous capsule which is intact for about one-half the extent of the growth and elsewhere has been broken through so that the tumor mass projects. The surface of the tumor is nodular throughout and contains numerous thin fibrous adhesions. Section through the tumor presents a fairly uniform appearance, the cut surface is light yellow in color, the tissue is soft in consistency and is made up of numerous small lobulations. Throughout the specimen are many small cystic spaces.

Microscopic examination: In the region of the fibrous capsule numerous small and porly developed acini resembling the normal structure of the pancreas are seen. The acini are lined with a low cuboidal type of epithelium, are regular in appearance throughout and are separated by a definite fibrous capsule from the main portion of the tumor. In some situations, however, fairly normal acini merge directly into the large irregular acini having cells of the same type. The main constituents of the tumor mass, however, are composed of irregularly developed masses of epithelium, the cells of which are rather small, the nucleus deeply staining and the

cytoplasm taking a very pink stain. These cellular masses are divided into irregular alveoli having a fibrous stroma, which for the most part is poorly developed. In these situations in which the stroma is well developed, occasional small acini and large blood vessels are noted. Necrosis is not present in any of the sections examined. The character of the acini, as noted, indicate that this tumor originated from pancreatic tissue and presents the general characteristics of a medullary form of carcinoma.

Pathological Diagnosis: Carcinoma.

This case is of interest because of the very extreme rarity of carcinoma of the pancreas in such a young subject; surgically, very bad judgment was shown in attempting its removal.

(Case 5). S. R., male, age 48, admitted January 26, 1923. Patient has a complete extrophy of the bladder; bilateral inguinal hernia, absence of the umbilicus; carcinoma of the bladder. There was a congenital absence of the symphysis pubis as shown by the x-ray. Just above the region where the symphysis pubis should be there is a reddish area in the midline about two inches in diameter. In the lower outer portions there are two dimples which correspond to the ureteral orifices. On the right outer edge there is a tumor one and one-half inches in diameter and about one inch in height which has the gross appearance of carcinoma. Right inguinal glands are enlarged. A biopsy of the tumor and the inguinal glands was done on February 26, 1923.

The patient is being treated with radium. The case is reported because of the extreme rarity of the condition.

DISCUSSION

Dr. J. A. Williams, Greensboro:

About two and a half years ago I had a case which reminds me very much of the case reported by Dr. Norris here. You could feel the mass in the right side of the abdomen, and upon opening the abdomen we found a mass about the size of an orange. The child was pretty sick and passed a bloody stool and vomited, and we did not have time to do resection, but did a total anastomosis. The child recovered and did well, grew fat and big. About six months ago it came back with a tumor the size of a grapefruit. We repoened the abdomen, did a resection of the intesine and removed a tumor about six inches, and did an end-to-end anastomosis. When the mass was examined it proved to be a sarcoma of the intestine. The child is still living today, over a year and a half, and has had no recurrences so far.

PERFORATED ULCER OF THE STOMACH AND DUODENUM*

F. G. DuBose, M.D., Selma, Alabama

The tragic suddenness and severity of the onset of perforative ulcer of the stomach and duodenum is characteristic. For this reason its early diagnosis should not be difficult. The sudden, agonizing pain, of continuous and increasing severity, remittent, rarely intermittent, is intensified by any movement or extension of the body; a bent or stooped and fixed position is assumed by the suffer. Nausea and vomiting are not characteristic. The pain is located in the upper abdomen, usually epigastric or hypochondriac at the onset, becoming generalized as the minutes or hours pass. The temperature at first is more frequent subnormal than elevated, and the pulse slowed rather than increased in frequency. In fact, the picture at the onset is one of shock. When the perforation occurs, the patient, when standing, as a rule will fall as if shot. One of our series fell from a wagon, another from a bicycle, and another to the floor. The physical examination alone is inconclusive. At the onset abdominal rigidity is more pronounced in the upper abdomen, and later a general boardlike rigidity with exquisite tenderness on pressure extends over the entire abdomen. The blood picture, if taken as soon as the perforation occurs, shows no change, but within an hour or more there is a marked increase in the leukocytes and polymorphonuclears, which increase is definite and progressive. The search for absence of liver dullness and the flatness of percussion on the flanks is time wasting and inconclusive. The early recognition of this condition is of utmost importance, for every tick of the clock brings the patient nearer to a fatal outcome. Some report a mortality of ninety-five per cent in the absence of immediate surgery. Every surgeon should realize that he is in the presence of an acute surgical abdomen, urgently demanding operative treatment.

Perforated appendicitis is the most frequently mistaken diagnosis, and the one made by me in the earlier days of my surgery. On opening the abdomen through a McBurney incision, or right rectus incision, on the absence of gross pathology in the appendix, there is a guide that has been unfailing in my experience for the immediate recognition of a perforated stomach or duodenal ulcer, and that is the flow of cloudy serum from above into the upper part of the wound. A light lifting of the upper parietal peritoneus causes an increase in the appearance or flow of this cloudy and frequently fibrin-flaked serum. With experience in observing increasing numbers, we find that less frequently there is failure in making the preoperative diagnosis. The boardlike rigidity with a history of sudden, excruciating pain of a continuous and increasing, rather than intermittent, type is very significant. In perforated cholesystitis or appendicitis there is usually a preceding period of pain

*Read by title.

and inflammatory reaction before the perforation occurs. This is not usually so in the pyloric or duodenal ulcer.

Immediate surgery rather than differentiated preoperative diagnosis is the one and only escape from fatality, with the rare exception of the pin-point perforations, which occur in the penetrating type of ulcers, and which as a rule are chronic and attended before the perforation occurs by a long period of severe pain, localized tenderness, and the usual symptom complex of peptic ulcer. The method of treatment of these surgical conditions varies widely with different surgeons. Many are content with simple closure, while others are doing very radical operations, such as posterior gastro-enterostomies, resection of ulcer or pylorus, etc. To illustrate: Charles Mayo says that gastro-enterostomy doubles the risk of operation, and that it is better to perform it if it becomes necessary, a few days or weeks after the acute condition has subsided. Deaver does a primary gastro-enterostomy in all cases, because, as he says, "In the hands of a skilled surgeon it gives a lower mortality, and is more likely to result in a permanent cure; if the appendix has not been removed, take it out; also the gall-bladder if diseased." I believe, however, that the vast majority of surgeons are content with closing up the perforation, securing it against leakage, draining the abdomen, and reserving for a later period such surgical procedures as may be indicated for a cure.

Our own plan in dealing with these depends on the location of the ulcer. If it is pyloric, we do the Balfour cautery method, extending the burn in a line following the long axis of the stomach and duodenum and sewing it up transversely, thus doing a simple pyloroplasty. If the ulcer be duodenal, after cauterizing the perforated area the indurated ulcer is excised longitudinally and sutured transversally, so as to avoid narrowing the lumen of the duodenum. In our series of fifteen cases there have been but two stomach ulcers; one was on the posterior wall about three inches from the pylorus, and the other was at the lesser curvature. These were cauterized and closed with tier sutures. There were five cases of pyloro-duodenal or saddle ulcers, and eight definitely duodenal; all except one of these last being within two inches of the pylorus and on the upper anterior duodenal wall, just about the location where the spurting of gastric contents impinges against the duodenal wall. We use catgut for the first two suture lines and linen for the last, and overlay the suture line with omentum, with three or four sutures to keep it in position. If there has been, and there usually is, especially in the cases seen late or in those with large perforations, extensive leakage into the abdominanl cavity, we are not content to mop out the excess of this soiling fluid but do a rather unpopular thing, that is, a thorough irrigation of the peritoneal cavity and liberal drainage. We use three rubber tubes with funnels attached for irrigating the peritoneal sac; one is placed in the pelvis, another underneath the liver, and another underneath the spleen. Water is poured into these until the fluid runs out clear. It is first poured into the one in the pelvic cavity, then into the one

underneath the spleen, and then underneath the liver, and repeated over and over again until the water returns clear. By this procedure we do not carry the spilled stomach contents into the remoter portions of the peritoneal cavity. If an appendiceal incision has been made, the rubber drain is brought out through it. If the preoperative diagnosis was correctly made, a drain is brought out through a suprapubic stab wound. The abdominal incision is then closed, care being taken to use about twice as many silkworm-gut sutures as in any other abdominal case, because these upper abdominal incisions are very liable to break open in these cases, due either to infection or too early absorption of the chromic cat-gut.

As soon as the anesthesia is begun, hypdermoclysis is started and at least 1000 c.c. of fifteen per cent glucose in normal saline is given subcutaneously. Before the patient is removed from the table a quart of hot tap water is given as an enema or clyster, and this is usually retained if properly given. A liberal amount of morphine is given for the first four days. The more severe the case, the more completely narcotized the patient should be. From four to six hours after operation proctoclysis is started, and if the patient has absorbed the hypodermoclysis another 1000 c.c. is given. If the outlook is bad, as it always is in cases operated on late, glucose and saline is administered intravenously, and when the pulse is weak and compressible fifteen minims of a reliable digitalis tincture is given intravenously at the same time. Where the pulse is exceptionally bad and the pressure extremely low, to the last 200 or 300 c.c. of glucose to be administered is added fifteen to sixty drops of one to one thousand adrenalin chloride solution, and this is allowed to flow into the vein until the adrenalin pulse is obtained. As fast as the hypodermoclysis is absorbed an additional injection is given until the patient's condition is so favorable as not to warrant or justify its use. In the more extreme cases, in addition to the hypodermoclysis the intravenous infusion is repeated as may be required. A rectal flushing through a tube with a funnel attached is given every four to six hours to prevent distention. Pituitrin, one to two c.c., is added to the hypodermoclysis in the severe cases, as it appears to sustain the unfortunately transient effect of the adrenalin chloride intravenously administered. Water is allowed in one ounce quantities at frequent intervals; the amount of water increased and the intervals shortened in the absence of nausea or vomiting. We are not unmindful that an acute dilatation of the stomach may occur.

Those cases that have come to operation before the expiration of twelve hours after the onset of the perforation have recovered, in our experience, regardles of the size of the perforation or the extent of soiling in the peritoneal cavity. In one case the patient had taken Sloan's liniment, and Sloan's liniment was found free in the peritoneal cavity. We have also washed out castor oil, Epsom salts, aspirin tablets, and partly digested food. In one of these cases the hole in the pylorus would admit the tip of the finger, and

the abdominal cavity was literally filled with partly digested food, Epsom salts, and castor oil.

In the fifteen cases that I have operated on there were two deaths, or thirteen and a third per cent. There was only one female in this series, and the ages varied from eighteen years to sixty. Of these two who died, one was seen thirty-six hours after onset and the other fourteen hours after onset. The fourteen-hour case was brought more than forty miles in an automobile over a rough country road. The thirty-six-hour case did not have abdominal peritoneal irrigation or washing; the fourteen-hour case did. All of the other thirteen cases had the abdomen irrigated as described. The average time of operation in these cases after the onset was eight hours. One was operated within one hour after onset, and his convalescence was easy and simple. A posterior gastro-enterostomy was done in one of these. A vicious circle occurred. He was operated the second time and a posterior gastro-enterostomy was changed from the short loop into the method of Roux. Only one of the remaining twelve cases has had subsequent trouble of sufficient severity to warrant intervention, and this case was opened by a surgeon in another hospital, who divided a few adhesions. The first case I ever saw was not recognized until post mortem, and was not surgically treated for that condition, but was drained as an acute appendiceal peritonitis.

SUMMARY OF CASES

Total Number	15	Mortality: 13.33 1/3%
Recoveries	13	
Deaths	2	
Cases operated before the expiration of 12 hours after perforation	12	0
Deaths	0	
Cases operated 14 to 40 hours after perforation	3	66.66 2/3%
Deaths	2	

IMPRESSIONS

Immediate operation for an acute surgical abdominal lesion is of primary importance.

Simple repair of perforation, omitting all unnecessary operations until a more opportune time.

Thorough cleaning of gastro-intestinal contents spilled into peritoneal cavity.

Ample drainage.

Introduction of fluids by hypodermoclysis and proctoclysis as a routine; employing intravenous infusion in the more severe or doubtful cases.

Adrenalin, putuitrin, and digitalis appear to be useful therapeutic measures as indicated.

OBSERVATIONS IN 175 CASES OF PYELONEPHRITIS

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In this report on renal infections the discussion will include those cases caused by organisms other than the tubercle baccilus. No mention will be made of malignancy.

In reporting any series of cases it is well to limit the discussion to some specific entity, and this has been limited chiefly to the discussion of the etiology, diagnosis and treatment of pyelonephritis.

It is only since the advent of the cytoscope that renal infections were taken out of the realm of uncertainty and put on a firmly established basis. Before this, we had to rely on clinical symptoms, a urinalysis and occasionally the x-ray, and, if the occasion justifies it, an exploratory operation was done to determine the exact pathology. With the present armamentarium at our command, an exact diagnosis may be made and it may be definitely determined whether the lesion be in the upper or lower urinary tract.

The sole brief held for this discussion is to re-emphasize the absolute necessity for making more careful and guarded diagnoses both of intra-abdominal as well as kidney lesions. To rule out the urinary tract in a severe surgical infection without making an exhaustive examination of the blood, urine and, if necessary, the feces, is to court disaster. No apology is made that this series of cases is seen solely from the urologist's standpoint or through a cystoscope, as sometimes is whispered along the side lines, as in every case a careful examination has been made both by myself and Dr. C. S. Lawrence. A report from the laboratory has been studied in every case, including a total leucocyte count, blood smear, hemoglobin estimation and an examination of the excreta, if necessary. It is only by the collaboration of the general surgeon with the urologist that these infections can be solved.

The literature contains enough corroborative evidence to satisfy even the most skeptical regarding these cases of wrong diagnosis. These urinary infections are with us, and just so long as we dismiss them lightly or explore the abdomen without determining the offending organ, then just so long are we going to have a persistent postoperative train of symptoms.

In this series of 175 cases of pyelonephritis admitted to the Lawrence Clinic and treated, twenty-nine per cent give a history of an intra-abdominal operation with no relief of the pain and other symptoms. The reports from any large clinic could be cited bearing out this statement, showing that we are too prone to rush in without carefully working up our cases.

The youngest patient seen was twenty-four months old, the oldest being eighty-four years old. The average age was thirty-

nine years. The number of females was one hundred and fifteen, while sixty males were affected. One reason why more females are affected is due, doubtless, to the lack of drainage caused by the generative organs encroaching on the urinary tract, this being recently emphasized in primipara admitted to the Lawrence Hospital complaining of nausea, vomiting and severe pain in the right side. She had high temperature and was very toxic. A cystocopy was done, a ureteral catheter was passed to the right kidney and a pyelogram made showing a constriction at the brim of the pelvis, due to pressure by the gravid uterus against the pelvic brim, causing an obstruction, which resulted in a marked dilatation of the ureter above that point, producing a hydro-ureter and stasis in the kidney pelvis. An indwelling ureteral catheter did not relieve the symptoms sufficiently to warrant its use for a long period of time, so the uterus was emptied and the patient made an uninterrupted recovery.

ETIOLOGY

The common causes of this disease are:

(1) Focal infections, including the teeth, tonsils, sinuses, skin, etc.

(2) Angulations of the ureter.

(3) Nephopiosis.

(4) Infection from adjacent structures.

(5) Stenosis of the ureter due to pressure or from external processes, such as gravid uterus, adenoma of the prostate, etc.

(6) Calculi.

It was found that fifty per cent of this series had definite infection in the tonsils demonstrated on removal. It is a common occurrence for a patient to complain of an exaggeration of the kidney symptoms following tonsillectomy. There are cases where the tonsils served only as a portal of entry, not causing any local symptoms, but their removal cleared up the renal pathology. We have repeatedly removed tonsils which contained pus but causing no pain in the throat, proving that we should be very wary about saying, "Oh, there is nothing the matter with your tonsils." Rosenow has hown that duodenal ulcer, cholecystitis, appendicitis and many other pathological processes are the result of foci located in the tonsils.

The teeth have been silent but very potent factors in certain of these cases, as twenty-one per cent were found to have abscessed teeth, demonstrated by x-ray or on examination of the teeth after removed. As high as seven abscessed teeth were seen in a woman with pyelonephritis with no pain whatever referred to the teeth, her infection persisting until they were removed, with no recurrence later. Pyorrhea pockets alongside the teeth also may initiate this condition. In seven per cent of the cases we were unable to find any definite focus of infection, possibly obscure lesions in the skin, or bone.

The sinuses may also cause trouble, though no definite pathology located in the sinuses was seen in any of these cases. The colon, gall-bladder and appendix may also harbor organisms having a predilection for the kidneys, so that in treating these conditions all of these potential causes must be eliminated before we can promise a patient a permanent cure.

Angulations of the ureter, ptosis of the kidney, ureteral stricture and lack of drainage due to pressure from without may cause pyelonephritis, well illustrated by cases of prostatic ademoma causing back pressure and stasis of the urine in the kidney with systemic absorption. Two of these cases required nephropexy to remove the symptoms, both kidneys being as low as the pelvic brim. Ureteral stricture has been found present in four per cent, showing that this also must be considered in infections ofthe upper urinary tract. Hunner maintains that stricture of the ureter is the chief cause of pyelonephritic but this view is not largely accepted, nor do we accept this as a primary etiological factor.

The methods of infection are usually considered as follows:

(1) Hematogenous.
(3) Lymphogenous.
(3) Direct continuity.
(4) Ascending along the ureter.

The concensus of opinion is that the vast majority are hematogenous, excepting the cases resulting from abnormal position of the kidney, lack of drainage, calculi, etc.

Volumes have been written about the offending organism in this disease, but the chief bacteria found are the streptococcus, staphylococcus and colon bacillus, the former two being found to be the chief sources of infection in this report. The pyogenic cocci are short-lived and usually are not demonstrable in the process they initiate, while the colon bacillus, being a secondary invader, as a rule, causes a purulent discharge, and is easily found in the urine. If a careful search is made the streptococcus may also be found, though the colon bacillus usually outgrows and literally crowds it out. What is usually seen is the end result not the exciting cause, the colon bacillus usually being found where the infection is not blood-borne.

DIAGNOSIS

I think it is safe to say that the majority of surgical infections can be definitely proven to be either in the kidney or not. This being true, then it rests with us, as diagnosticians, to eliminate the kidney before exploration of the abdomen is justified. While seventy-four per cent of this series complained of pain in the affected side, pain and tenderness are unreliable signs. Radiation and juxtoposition of the abdominal contents make these signs unreliable. Muscle spasm is of significance, being, as a rule, pres-

ent in peritoneal infections. The temperature in kidney infections is usually higher, with a lower pulse rate and frequently a chill at the onset. The leucocyte count is higher where the peritoneum is involved, rarely, as a rule, in kidney infections, being over fifteen to eighteen thousand white cells. Nausea and vomiting is usually present in abdominal infections, less so in kidney ones. Too much dependence should not be put localization of an abdominal mass by palpation, the following case illustrating this point:

A man, age thirty-three, entered the Lawrence Hospital March 22, 1922, complaining of a tumor mass in the left hypogastric region, freely movable and tender on pressure. The mass was the size of a large grapefruit, and could be freely moved into any other part of the abdomen. The history revealed the fact that he fell off a wagon, striking on the buttocks, temporarily stunning him, but he was able to get up in a few minutes and resume his occupation. He had no further symptons until three weeks ago, when the tumor had become so large that it interferred with his work. A physical examination was made, but on account of the difficulty in localizing the mass a cystoscopy was done and a pyelogram made of the left kidney, which showed the mass to attached to the lower pole of the kidney. On removel it was found to be a hemorrhage cyst within the capsule. His recovery was uneventful.

Thirteen per cent of this series had postoperative pyelonephritis, showing that it is quite common as a sequela of pus in the abdomen, and also that frequently these two conditions may co-exist and one serve as the cause of the other, and only by relieving both the infections can we stop the vicious circle.

Of the one hundred and seventy-five cases, pain in the affected side was present in seventy-four per cent, while dysuria and frequency were present in fifty per cent, varying from a slight frequency to very urgent tenesmus. Hematuria was seen in sixteen per cent, while ten per cent had pain referable to other ograns. Seventy-one per cent had bilateral pyelonephritis; twenty per cent were on the right side, and nine on the left. Five cases had atrophic pyelitis, with marked dimunition of the pelvic capacity. This condition is very obstinate and required very careful dilatation in addition to the other measures. This process is diagnosed by a pyelogram after it is found that the pelvis does not hold as much as it should, i. e., from five to eight c.c.

In any case where doubt exists, it requires but a few minutes to pass a ureteral catheter to the kidney and definitely establish the status of the kidneys. Preliminary narcotization and gentleness in passing the instrument will obviate most of the pain incident to cystoscopy, so let me urge you to avail yourself of this aid in helping to solve every doubtful case.

A diagnostic point of much importance is hammer percussion over the suspected kidney, pain being elicited in ninety per cent of the cases, varying with the degree of involvement of the kidney.

In the diagnosis of appendicitis, beware of chronic pain in the right side with no acute flareups; also consider carefully a diagnosis of appendicitis made with the x-ray with no outstanding abdominal symptoms. Urinary findings may be both helpful and misleading; a single negative urinalysis may lull one into a false sense of security due to temporary lack of drainage caused by a plug of mucus, so that, whenever possible, a twenty-four hour specimen should be obtained and examined.

In a recent paper by the writer, attention was called to the fact that in a series of one thousand autopsies the record revealed that twenty per cent showed that definite inflamatory changes were present in the kidney, and of more significance was the fact that they were entirely overlooked in the determination as to the cause of death—rather a high percentage of error.

Eight patients in this report passed stones as a result of cystoscopic manipulations. Twenty per cent of these stones were overlooked by the x-ray. Braach, Cabot, Hall and others report from nine to twenty per cent of ureteral stones not demonstrable by the x-ray, so that it is necessary in all cases where there are red blood-cells in the urine to pass a wax-tipped catheter to the knidney and on withdrawal to examine it for scratch marks. Keyes has devised a simple technique for passing a waxed bulb through the ordinary cystoscope, and is of the opinion that many stones may be found by this method that would otherwise escape notice. The term "essential hematuria" has given way to scientific diagnosis, and if the case be carefully worked up we shall find it unnecessary to hide our ignorance behind this meaningless term. McNider, Payne and others have shown that many of the so-callled "essential hematurias" were the result of infections about the collecting tubules, resulting in scar tissue which interferred with the return blood supply, causing congestion and rupture of the papilla with hemorrhage. This pathological process may be the primal factor where tumor, calculi, infections, stricture, pyelitis granulosa, trauma and trauma and tuberculosis are ruled out. With the aid of a pyelogram or ureterogram, together with the renal function and blood retention tests, a positive diagnosis can usually be made.

Several years ago John B. Murphy stressed the importance of obtaining an accurate history and making a careful examination, paying close attention to the sequence of the symptonms as they appeared. The careful surgeon will correlate and make his deductions from the above-numerated findings, and if this is done there will be a great reduction in the number of cases of mistaken diagnosis and unnecessary abdominal explorations.

TREATMENT

In attempting to clear up renal infections, several factors must be considered. Conservative treatment in the past has not properly solved the problem, *per se,* as the etiological element

was not considered. While we all advocate rest in bed, fluids, urinary antiseptics and dietary measures, we must not lose sight of the fact that, in many instances, the patient's life is at stake, and recent experience has taught us that more radical procedures are indicated and necessary. The treatment will, therefore, include:

Supportive treatment will include hospitalization, with rest, forced fluids and the administration of some urinary antiseptic, and, if necessary a sedative, for the pain incident to the passage of a plug of mucus through the ureter is just as severe as that caused by a stone, for it is the sudden blockage of the ureter with distention of the kidney pelvis that causes such intense pain. Mixed vaccines in certain cases, may prove helpful, though never depended on alone. We have found that failure to eliminate the causative agent will fail to permanently cure the patient, well illustrated by the fact that several patients who refused to have their tonsils removed, even though the kidney was repeatedly lavaged, still complained of their symptoms, but later, after removing the cause, they promptly got well.

I recall a case where it was necessary to withdraw seven abscessed teeth before the patient got entirely well. Frequently, because the patient does not have toothache or tonsillitis, it is hard to convince them of the necessity of an x-ray of the teeth and perhaps the extraction of several silent abscessed teeth or removal of tonsils to cure them.

It requires all the patience of the physician at times to handle some of the patients who say "Why, Dr. So-and-So said that tooth is as sound as a dollar," when we tell them it should be extracted, or say, "Dr. So-and-So said my tonsils were all right,"—a very broad statement for a physician to make from a superficial examination of the throat. More than one prominent otolaryngologist has said that he had never seen a normal pair of tonsils. If the focus be elsewhere, diligent search and elimination will reward the effort.

With the aid of the cystoscope the exact pathology can usually be determined, and by passing a catheter to the kidneys surgical drainage is established just as much as a tube drains an abscessed appendix. It has been found that silver nitrate is most efficacious in clearing up pyelonephritis. It does not merely localize itself in the pelvis, but Magoon has shown that this antiseptic penetrates the tubules as far as the glomeruli, sterilizing the entire tract. Merchurochrome gives fairly good results, but silver nitrate causes an erosion of the epithelial layers of the pelvis, thus allowing sterilization of the underlying tissues. The pelvis should be distended to the point of fullness, not pain; otherwise the results are not so beneficial. Experience will obviate the necessity of using any special apparatus to determine the pressure of the injected fluid, an ordinary twenty c. c. Luer syringe will answer all purposes. In conditions where hematuria is present

five per cent silver nitrate may be used with impunity, and will usually stop the bleeding unless the cause is specific. If a stenosis of the ureter is present, it will be necessary to dilate it and establish free drainage. We make it a routine procedure to dilate all ureters to 11 F, thus insuring free drainage. If there is a stricture of the ureteral orifice, this may be relieved by cutting it with scissors and subsequent dilation.

In correcting mechanical defects, it is necessary to consider such conditions as ptosis of the kidney causing kinks in the ureter, pressure on the ureter by an abdominal viscus, adenoma of the prostate, etc.

In selected cases of hydonephrosis a plastic operation on the sac may benefit certain cases a great deal; occasionally in pyelonephritis of pregnancy it will be necessary to empty the uterus, but and indwelling ureteral catheter should be tried and, if necessary, continuous pelvic lavage instituted.

In this series only one surgical kidney was seen, it being an acute fulminating streptococcus pyonephrosis, which required nephrectomy. By draining the kidney with a catheter and promptly eradicating the cause we shall, in a vast majority of the cases, save the patient an operation. Our records show ninety-four per cent cures where the patint consented to complete eradication of the focus and continued treatment until the specimen was free of pus and culturally negative.

CONCLUSIONS

1. A very careful examination of the urinary tract should be made before one is justified in opening the abdomen.

2. Twenty-nine per cent of this series had an abdominal operation which did not relieve the symptons at all.

3. Pylonephritis is being constantly overlooked as well as dismissed lightly by the medical profession, and as long as we do this we shall fail to cure a large number of cases.

4. A diagnosis can usually be made by an examination of a twenty-four hour specimen of urine and if necessary, a cystoscopy, ureteral catheterization and pyelogram if in doubt.

5. The treatment consists not in conservative methods but in elimination of the focus, lavage of the kidney pelvis and dilatation of the ureter, with the correction of any mechanical defects present.

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DISCUSSION

Dr. L. A. Crowell, Lincolnton:

I want to say at the beginning that I believe in the conservative treatment of these cases. I would not be inclined to use the cystoscope until I had first given the case a thorough medical line of treatment. The line of treatment that I have been following for several years has been about as follows:

The patient, first of all, is put to bed. A liquid diet is given with rather large quantities of water. Urotropin in 7½ grain doses is given in connection with acid sodium phosphate in 15 grain doses every three hours until the urine becomes distinctly acid, when the acid sodium phosphate is replaced by sodium bicorbonate in 30 grain doses. In my experience, the majority of these cases will clear up under this line of treatment in the neighborhood of a week or ten days.

I thoroughly agree with the doctor that no man has a right to go into the patients belly unless he has done everything in his power to make a diagnosis beforehand, and I would especially advise that all cases have a complete urinalysis, both chemical and microscopical, before any abdominal operation is done. In many cases the clinical symptoms will make the diagnosis between pyelitis and appendicitis; for instance, as a rule, pyelitis is accompanied by a chill followed by high temperature. These chills may recur two or three times during the twenty-four hours, while, on the other hand, it is a rare thing for a person with appendicitis to have chills. As the Doctor has suggested, pregnancy is one of the most frequent etiological factors in the production of pyelitis. Another frequent cause of pyelitis is the keeping of a person confined to bed for weeks at a time in a recumbent position.

I remember well a case of typhoid fever which I had a number of years ago, who was confined to bed for several weeks, and after the temperature had been normal for more than a week

he developed chills and fever. On examining the urine it was found to be loaded with pus. He was placed on the line of treatment referred to above, and, in addition to this, the position frequently changed in bed. In a short while he convalesced very rapidly.

Dr. J. D. Highsmith, Fayetteville:

There is one thing I would like to add to the Doctor's paper, and that is the frequency with which the focus of infection in these cases of pyeloephritis will be found in the colon and accompanied by chronic constipation. This must be taken into consideration in the treatment.

Dr. Stirling, closing the discussion:

In regard to what Dr. Crowell said about the diagnosis, I agree with him that the two conditions of pyelonephritis and appendicitis should be easily differentiated, but how can we account for that large number of cases that being overlooked and operated on for some other condition? Many an innocent appendix and gall-bladder has been sacrificed when the trouble is a kidney condition. Reports from prominent clinics have shown that 25% of the cases have had a previous operation with no relief of the symptoms, so we see that these cases are being misjudged every day. I do not wish to be classed as a fanatic on this subject, but I can not but be forcibly impressed with the results obtained in this series after various other surgical procedure had failed.

GASTRIC ULCER WITH REPORT OF CASE

L. A. Crowell, M.D., Lincolnton

Gastric ulcer is an ulcer located somewhere in the stomach between its cardiac and pyloric orifices. Ulcer of the stomach occurs three times as often in men as in women. I shall not attempt to review the many theories that are held as to the etiology of gastric ulcer, but will confine my remarks to only a few proven facts.

Experimental mechanical irritation has failed to produce gastric ulcer. Jugglers and people who eat coarse and indigestible food are no more susceptible than those who are more careful of their diet, and, in order for these indiscretions in diet to produce ulcer, there must be back of them some disturbance in the circulation of the blood in the mucus membrane of the stomach or some distant focus of infection somewhere in the body to act as an exciting cause. Focal infection, especially of the teeth and tonsils, seems, therefore, to enter largely into the causation of gastric ulcer. This has been proven rather conclusively by Rosenow, who has shown the bacteria from the tissue of an excised

ulcer of the stomach to be the same as those cultivated from an abscess around the root of a tooth. The cultures from each repeatedly injected intravenously produced ulcer of the stomach. A like condition was produced experimentally by cultures from a blind abscess pocket in a small uninflamed tonsil in one other case. Hence the importance of the detection and elimination of all points of focal infection as a forerunner in all lines of treatment of gastric ulcer. Just what part hyperchlorhydria plays in the causation of gastric ulcer has never clearly been defined; but we do know that is has a great deal to do with the causation and aggravation of the symptoms after an ulcer has once formed.

Mann and Williamson, of the Mayo Clinic, have recently been doing some experimental work on dogs and have produced peptic ulcers very similar, pathologically, to those found in man. They have reported this work in a paper read before the Academy of Medicine in Buffalo, N. Y., on January 3, 1923.

These experiements, the object of which was to prevent the alkalizing effect of the intestinal secretion of the digestive tract on the acid gastric juice, seem to emphasize still more the importance of the acid as a causative factor in the production of ulcer. The most important symptom in the diagnosis of gastric ulcer is pain. This usually occurs several hours after the taking of food and is described as "boring", "burning", "aching", or a sense of fullness with acidity. There may be a "gnawing" or empty feeling with a desire for food—the so-called "hunger-pain". The location of the pain is rather indefinite. In most cases it is on the left side high up in the epigastric region. It may extend through from the epigastric region to the back and left shoulder blade. The characteristic thing about this pain is that it is temporarily relieved by the taking of food or alkalies. In a recent case under my observation, the pain would entirely disappear after the taking of one swallow of water only to return a few minutes later. As the pain is more severe when the acid gastric juice is at its highest point, which is one to three hours after the taking of food, it appears quite evident that the pain is due to the irritation of the acids. Gastric analysis in most cases shows hyperchlorhydria; however, we do have ulcer with a low hydrochloric acid. In these cases the pain would likely be due to the irritation of the acids of decomposition or to gastric peristalsis, as suggested by Leo Hardt.

Vomiting is rather a frequent symptom, especially in those cases in which the ulcer is located near the pylorus, thus producing more or less narrowing of this opening. These are the cases in which large quantities of food, which has remained in the stomach for long periods of time, is vomited. Vomiting, as a rule, gives temporary relief to the symptoms, especially the pain. I recall a recent case in which vomiting was the chief complaint, the patient being unable to retain even liquid food or water. At operation, the ulcer was found to be more than an inch in dia-

meter and had almost completely occluded the pyloric orifice, and, as the man was more than sixty-two years of age, I made a tentative diagnosis of cancer and did a gastro-enterostomy, hoping, thereby, to give the patient temporary relief.

It has now been twenty-one months since the gastro-enterostomy was done. The patient has gained forty pounds in weight and is able to eat any food that he desires without discomfort, and to all intent and purposes is entirely well.

Hematemesis has been a rare symptom, in my observation. Monyihan records it in less than twenty-five per cent of his cases, and in most of these the amount of blood lost was very small; and, in some, there was even doubt as to the presence of blood. Hemorrhage from the stomach does not always mean ulcer, as there are many other conditions which may cause it—for instance, a strawberry gall-bladder, cirrhosis of the liver, appendicitis, and other infective conditions within the abdomen.

The x-ray is one of the most important means of diagnosis, if properly used and rightly interpreted. Carmen, with the Mayo Clinic, has been able by means of the x-ray to make a correct diagnosis in more than ninety-eight per cent of the cases.

There are a certain number of cases that present none of the cardinal symptoms of ulcer, and the first evidence that the patient had ulcer is that he develops an "acute abdomen", and, on exploratory operation, it is found that he has a ruptured gastric ulcer.

In speaking of the treatment of gastric ulcer, we would divide it into medical and surgical. We are aware of the fact that this is a mechanical condition and is not ordinarilly amenable to medical treatment. At the same time, I do not consider it fair to the internists to claim that gastric ulcer is a purely surgical condition, as I believe that, in its early stages, with proper medicinal and diatetic treatment a great many cases could possibly be saved from surgery. In these early cases, I have no doubt that a great deal of good, and possibly cure, can be effected by the milk, cream and alkali treatment as advocated by Sippy of Chicago.

While I have not had a great deal of experience with this line of treatment it is being used with some modification at the Mayo Clinic, with good results. In theory this appears to be the best line of medical treatment that we now possess, as it keeps the stomach contents at a low state of acidity; thereby relieving the irritating effect of acids on the ulcer. Dr C. H. Mayo says: "We agree with Sippy that control of the acids limits peptic activity, and gives relief of symptoms; but we also agree with Monyihan that treatment only tides through the exacerbation and does not cure permanently."

In doing a gastro-enterostomy, we neutralize the acid gastric juice with the patient's own intestinal fluids. Dr. Charles Mayo likens the relation of ulcer and gastro-enterostomy to the process of scientific farming. "The first thing a farmer does with a piece of dark, soggy soil is to drain it from beneath. After the ground is dry, he treats it with lime and then sows his crop, finally reaps his harvest.

Similiarly, gastro-enterostomy drains the stomach, and the regurgitating duodenal and pancreatic juices act as lime or alkali on the gastric juice, and prepare the soil for undisturbed digestion and a harvest of good health."

Dr. John B. Deaver claims that the prolonged treatment of chronic indurated, callous, peptic ulcer is "pussy-footing". In other words, he says it is courting disaster in the shape of hemorrhage, perforation, and in a certain number of cases, carcinoma.

The diagnosis has been made. Medical and diatetic treatment have failed. Surgery must be resorted to. What shall we do and how shall we do it? Shall we do an excision of the ulcer or a gastro-enterostomy, or the two combined? If the ulcer is small and at any point away from the pyloric orifice, it may be excised and no farther treatment would be indicated. If large, or located near the pylorus, and especially if it is producing any obstruction at this point, do a gastro-enterostomy alone or combined with resection.

Men of large experience have taught that all bleeding ulcers should be dealt with radically and excised either with the knife or cautery. At the Mayo Clinic, as stated by Balfour, gastro-enterostomy has been a part of the surgical management in eighty-two per cent of the operations for gastric ulcer during the last seven years.

One of the most frequent sequelae of a gostro-enterostomy is ulcer of the jejunum. This may be due to several factors: First, it may be caused by non-absorbable suture material. Secondly, it may be caused by the trauma produced by the clamps used in doing the operation. Hence Coffey has advised doing the operation without the use of clamps. This I have been doing recently, and, if you have never tried it, you would be surprised to know the ease and rapidity with which it can be done.

On a recent visit to the Mayo's I noticed that Will Mayo is doing most of his gastro-enterostomies without the use of clamps. He, however, has not been doing this sufficiently long yet to say whether or not it well lessen the occurence of jejunal ulcer.

Several years ago we heard a great deal about the "vicious circle" and postoperative vomiting following gastro-enterostomies. This we rarely hear of now, and it seems that improved technique has removed this complication.

It has been roughly estimated that from five to ten per cent of gastric ulcers perforate. This is a serious complication and becomes more dangerous if it occurs as a primary symptom, and is almost universally fatal unless early diagnosis is made and prompt surgical treatment instituted.

The symptoms of a perforated gastric ulcer are the usual symptoms of a rupture of any other abdominal organ. Pain is the first and most prominent symptom and is possibly the most severe abdominal pain with which we have to deal—with the possible exception of the pain which accompanies acute pancreatitis; it comes on suddenly, followed by shock and muscular rigidity.

At the beginning the pain and rigidity are more marked at the seat of the perforation; but as general peritonitis develops, these become generalized over the whole abdomen. The rigidity is board-like in character, and frequently persists even after the patient is completely anesthetized. A positive diagnosis of an acute perforated ulcer is not made, in most cases, until the abdomen is opened. I have no doubt that a diagnosis could be made more frequently if a more thorough history were taken in every case; but this is often neglected by most of us on account of the critical condition of the patient when first seen. So, many times, we have to be satisfied with the general diagnosis of "acute abdomen". Prompt operative measures should be instituted at the earliest possible moment, as every hour's delay makes the case a more desparate one. If I had an acute perforated ulcer of the stomach, I would rather have a sensible surgeon with limited experience operate on me within six hours than to have a Mayo, Deaver or Finney operate twenty-four hours later. When the abdomen is opened that character of the fluid found will make the diagnosis almost positive. These cases are frequently diagnosed as general peritonitis due to a ruptured appendix. While the fluid may resemble pus, there is absolutely no odor to the fluid that comes from the stomach. If there is odor, it means that the colon bacilus is present, and you know that you are dealing with the bowel or with the appendix. The fluid from a ruptured gastric ulcer is also acid in reaction, which can be tested by sterile litmus-paper.

I notice in the Presbyterian Hospital in Chicago that they have adopted as a routine measure in all suspected ulcer perforations the giving of three grains of methylene blue in two ounces of water. This is given one-half hour before the beginning of the operation. At operation, if a perforation is present, the blue stain can be seen seeping through the opening. I have never used this procedure but I should think it would simplify the locating of the perforation. After the abdomen is opened, it is important to be able to say whether a given case is a ruptured gastric ulcer or a duodenal ulcer, as their complications and sequellae are very different. For instance, cancer developes frequently on the base of a gastric ulcer and almost never in a duodenal ulcer.

In late cases, shall we do gastro-enterostomy? Men of wide experience advise that a gastro-enterostomy be done in all cases. I see no reason for doing this except in those cases where the ulcer is located near the pylorus and is producing obstruction at this point. I certainly would not think of doing a gostro-enterostomy in cases of over twelve hours' duration, in the presence of a general peritonitis, which I am sure would jeopardize the patient's chances of recovery. I am therefore convinced that the less you do outside of closing the leak and establishing proper drainage, the better. If the operation is done early the abdomen can be closed up without drainage, or if in doubt one small drain can be placed at the point of perforation. However, if the case is of over twelve hours' standing, in addition to the drain referred to above, it is better to make a stab wound above the pubis, and push a good-sized dressed rubber tube drain well into the pelvis. I have great faith in suprapubic pelvic drainage in all cases of general peritonitis, and especially where free fluid or pus is present. I am quite sure that I have saved patients by the use of this drain, who otherwise would have died. The peritoneal cavity should never be irrigated, as this can only disseminate the contents and do nothing but harm. Before the drains are placed the peritoneal cavity should be cleansed as thoroughly as possible with gauze pads wrung out of warm normal salt solution. In cases where large quantities of free fluid are present, some form of suction can be used to great advantage. This is of especial use when the pelvis contains fluid. I am accustomed to using the water suction apparatus. This removes the fluid much more rapidly than it can be done with gauze and produces less irritation.

In this connection, I wish to report a case of acute perforation of a gastric ulcer. Mrs. C., aged 38, mother of four children. Patient was admitted on Sept. 9, 1921, about 8:30 A. M. She stated that she had suffered with stomach trouble as long as she could remember, suffering pain several hours after taking food. On the night before admission she was taken suddenly ill, complaining of severe pain in the upper abdomen. When seen at the hospital the next morning she had the usual symptoms of "acute abdomen", and this diagnosis was made and immediate operation advised. An exploratory incision was made. When the peritoneum was opened free fluid of a slimy nature, without odor, was found. On more thorough investigation the whole peritoneal cavity was found to be invaded by the fluid, the pelvic cavity containing more than a pint of it. From the character of the fluid, a diagnosis of a ruptured gastric or duodenal ulcer was made. The ulcer was found on the anterior surface of the stomach about two inches to the gastric side of the pyloric vein. The perforation was closed by first surrounding the opening with a purse-string suture of catgut. This stitch was not tied; two cross stitches of catgut were then passed. These included all coats of the stomach, and crossed each other at the center of the perforation. After these were tied, the purse-string stitch was drawn tight, which brought the opening together snugly. Over

this, several interrupted stitches of catgut were taken. Before being tied, a piece of omentum was placed over the suture line, and held in place by the interrupted stitches. A suprapubic stab wound was then made, and a good-sized rubber tube drain was pushed through the opening to the bottom of the pelvis. Another small cigarette drain was placed in the subhepatic space, and brought out at the upper third of the wound. Immediately following the closure of the leak, a stomach tube was introduced and a pint or more of fluid withdrawn. The patient had an uninterrupted convalescence and left the hospital on the eighteenth day. I saw her on December 7, 1922, and found her in perfect health, having none of the digestive symptoms of which she had complained before.

DISCUSSION

Dr. J. W. Gibbon, Chairman, Charlotte:

This is a very interesting paper of Dr. Crowell's and very comprehensive, not only as to the diagnosis and complications, but also as to the treatment of gastric ulcers. It should be interesting to every surgeon here and bring out considerable discussion. I think gastric ulcers are a good deal more common than many of us would believe. I think the disease begins in youth. Most of the patients you see give a history covering twenty to thirty years.

I have seen one patient seventeen years old with a huge calloused ulcer of the stomach.

Dr. R. H. Crawford, Rutherfordton:

I would emphasize the value of finding occult blood in the stools as an aid to making a diagnosis in gastric ulcer.

Dr. D. Heath Nisbet, Charlotte:

I want to discuss this subject from the medical side. Both medicine and surgery can offer the same chance of relief and cure, that is around sixty-five per cent. In duodenal ulcer the percentage is higher, about ninety per cent, according to Mayo. The early ulcer, and the one without much obstruction can be cured medically, by means of rest in bed, diet, Sippy system of alkalies, and the use of antispasmodics. The mistake that has been and still is being made is the failure to follow up the case after operation. A surgical case should be put on a careful diet, with alkalies, or should be referred back to the gastro-enterologist to see if the hyperacidity is replaced by a normal secretion. The medical case should be followed for from eight to twelve months. The patient should report once a month, and should stay for four months on the same diet that he had in the hospital, and then gradually increase it.

The sooner the surgeon and the medical man get together on this question, the better it will be for the patient.

Dr. Ernest S. Bullock, Wilmington:

I had the privelege recently of attending a Symposium on Gastric Ulcers held in the Massachusetts General Hospital. The discussion related to the relative value of the surgical and medical treatment of this condition. Case records and statistics from that Hospital were freely cited and I was suprised at the excellent medical results that were recorded, and at the tolerant attitude of the staff members of that hospital toward this conservative treatment. So far as we could conclude from the evidence presented they felt that the medical and surgical treatments were about equally good.

Question:

I would like to ask Dr. Bullock how long a time it will take before a case would be pronounced cured, medically.

Dr. Bullock:

There was, of course, no definite time. The medical cases, some of them, went for a very long period, some of them several years. I should say the treatment covered a period of varying from one to two years.

Dr. Henry Norris, Rutherfordton:

I would like to go on record as saying that I believe the treatment is absolutely surgical, once you diagnose it.

Dr. John P. Kennedy, Charlotte:

One of the men who attended the meeting of the American College of Physicians, in Philadelphia, said that a pathologist reported on one thousand autopsies at the Philadelphia General Hospital, and made the statement that if the whole population of Philadelphia suffered with gastric ulcer in proportion to those one thousand there would be eighteen thousand cases in that city—by which he meant to show that gastric ulcer is much more common than is ordinarily supposed.

We have to remember that a great many patients are treated medically for gastric ulcer who have no ulcer. They are treated for months and months, and then it is found that it is something else than ulcer.

Dr. Crowell, closing the discussion:

I merely want to thank the doctors who have discussed my paper. I would like to further impress upon you the importance of placing these people on a strict diet after they leave the hospital. Another thing which I believe we should always see to is that the patient should have all his teeth thoroughly x-rayed, and, if found defective they should either be treated or extracted.

Dr. Gibbon, Chairman:

I think the thing that we have all learned by this discussion is the fact that probably ulcers of the stomach are common, com-

paratively speaking, and should be thought of, and that the diagnosis should be made early and treatment instituted, whether medical or surgical.

Dr. T. C. Bost, Charlotte:

Dr. Crowell has given us a good paper and brought up some very timely points.

He brought up the question of doing a gastric-enterostomy in case of a ruptured gastric ulcer. Here I think Dr. Crowell is perfectly right in doing nothing more than dealing with the rupture. By the time such a case reaches the surgeon the patient is already in a state of considerable shock from chemical and possibly bacterial peritonitis as well. Gastro-enterostomy prolongs the operation considerably and accentuates shock and also tends to scatter infection, and as a result raises the mortality. Furthermore reports show that about 75% of ruptured ulcers are cured by simply paring the edges and closing.

This leaves only 25% of the cases that have a return of gastric symptoms later. In other words it is a great mistake to subject unnecessarily three-fourths of the cases to gastro-enterostomy with its additional mortality just for the benefit of the remaining one-fourth of the cases which can always be dealt with subsequently and at a much safer time.

"SOME PHASES OF INDUSTRIAL SURGERY"

F. Webb Griffith, A.M., M.D., Asheville

The past twenty years have witnessed a tremendous change in the attitude of employer to employee. Every one of us here today can easily remember the time when if a man "took a job" he did so entirely at his own risk. The attitude then of most employers was that if the workman was not satisfied with the hygiene or the safety of the work he did not have to take the job, but that if he did take it, he and he alone was responsible. It was a most pernicious attitude and very much like that of "caveat emptor." So long as the workman could perform the required duties, he was of value to the employer. Should he, through illness or accident, become partially disabled, he would be scrapped without the slightest effort being made to rehabilitate him. The slaves of our forefathers, when sick or injured, were taken care of, the best available skill was provided and everything possible done to restore them to health. The slave had a definite monetary value and was a tangible asset, so that from a purely economic standpoint it was wiser to restore him to health than to carry him as a liability. The sick or injured workman, however, represented an entirely different problem. The employer did not have to carry him as a liability; therefore the simple thing to do was to let him go and employ another.

A marked change has been going on in the past few years and it has not reached its completion. The laborer has acquired new rights which are recognized both by the employer and the public. That may be due to the growth of the unions, as they themselves

claim, but I prefer to believe that it is due rather to the growing democracy of mankind, and the realization by the employer that after all he is his brother's keeper.

Aside from the humanitarian standpoint, industry has learned that it is cheaper in dollars and cents to keep employees healthy and safe than to discharge them and employ others. Every man, however humble his work, becomes more and more efficient as his experience increases. Therefore, to discard an ill or injured experienced workman and employ another simply increases the turnover and detracts from the efficiency of that position.

Man has the right not only to demand life, liberty and the pursuit of happiness, but also a hygienic and reasonably safe environment for work. It, therefore, becomes the duty of those of us who do a certain amount of industrial surgery, first, to use our best efforts to maintain the health and safety of this great group of American citizens, and, secondly, to restore to health and efficiency as quickly as possible those who have become disabled.

The remainder of this brief paper will be devoted to one phase of the second classification, namely, the care and treatment of the injured workman.

Injuries of the back always present to me a most difficult problem. To arrive at anything like an accurate diagnosis at times is very hard. When there is added the element of liability and compensation the difficulties are tremendously increased. An employee with a broken bone or a lacerated wound will give you the history of the accident and let the evidence speak for itself, knowing full well that there will not be the slightest doubt in the mind of the surgeon as to the extent of the injury. When, however, he comes in with a painful back, he usually has a preconceived idea, since there are no obvious wounds which he or his friends can see, that the surgeon will think he is faking. And especially will he assume this attitude when he considers that the surgeon is employed by the company.

The injured employee therefore feels that it is up to him to convince the surgeon of the seriousness of his injury and the extent of his suffering, and in order to do this he will frequently unintentionally exaggerate his symptoms without any desire to really deceive. For that reason, whenever an employee comes to me with an injured back, I at once say to him, "Yes, my man, I know you are suffering, and probably more than if you had had a bad cut. I had the same thing myself once and I remember how I suffered." Some such remark as that will immediately convince the patient that you have conceded the fact that there is an injury and that he is suffering. You have gained his confidence and can go ahead with the examination as if there were no liability. If for any reason the man is trying to fake, and in my experience such cases are extremely rare, he will continue to try to convince you how seriously he is hurt, and will soon convict himself.

For practical purposes most of these back injuries can be classed under five distinct groups:

1. Muscle strain.
2. Lesions of the sacro-iliac joint.
3. Sprains of the deep lumbosacral structures.
4. The chronic strains.
5. Non-traumatic diseases of the lower back.

The simple strains caused by ordinary heavy lifting, especially in one not accustomed to it, do not as a rule bring the patient to the surgeon. The condition gradually corrects itself in a few days.

A sprain of the sacro-iliac joint manifests itself usually by a sudden pain in the lower back. The patient feels as if something has suddenly given away, or, as he sometimes expresses it, "I could feel something slip out of place." He probably has to quit work, but frequently the symptoms do not reach the maximum for twenty-four hours. If examination is made within a few hours after the accident it may be possible to localize the pain definitely in the sacro-iliac joint. After a few hours the whole back becomes sore and the localization is not so easy. There is always a synovitis, and if the effusion is marked a slight fullness may be felt over the joint. Kernig's sign is present. That is obtained by keeping the knee straight and then flexing the thigh on to the abdomen. This maneuver, by pulling on the hamstring muscles, will cause pain in the joint. Also, it will be found that the patient can bend the trunk toward the affected side, but motion in the opposite direcion is limited.

The symptoms of sprain of the lumbosacral structures are in many ways similar to those of the sacro-iliac. The maximum disability occurs almost immediately, rather than twenty-four hours later. Pain is a little higher and a little deeper. There is more limitation of motion of the lower spine than in sacro-iliac sprains. Kernig's sign is absent.

In both the sacro-iliac and the lumbosacral types I have found the x-ray of very little value.

In both types treatment is essentially the same, and consists of absolute rest on a fracture bed, strapping of the back, a small pad in the lumbar region, and the application of heat. Massage and active or passive motion are absolutely contra-indicated. Occasionally such cases immediately after injury get into the hands of our friends, the ostepath or the chiropractor, and, like the unclean spirit of which St. Luke speaks, "the last state of that man is worse than the first."

The fourth group, or chronic strains of the back, can, just as in other joints, result from repeated mild acute strains, or they may occur as the result of years of poor posture. These cases are more or less vague or indefinite. This type is well illustrated by that great group who went into the Army. When stripped for examination they appeared to slump, standing first on one foot and then on the other, leaning against some object for support, and definitely round-shouldered. Their pains were vague and indistinct. They returned from the Service erect in posture, with well developed

back muscles and no thought of back ache. We still see in our industries a great many of this type of patient, and they are prone to blame their numerous aches and pains on some unusually heavy lifting rather than on their own physical defects.

Lastly comes that group of diseases of the lower back, such as hypertrophic arthritis, the arthritides secondary to a focal infection, tuberculosis, bone tumors, etc.

Obviously in these cases there is no liability, as the ordinary exertion incident to work simply reveals the pre-existing underlying trouble. Here the x-ray is invaluable. I do not pretend to treat these cases nor even diagnose them, for once they are suspected they should be sent to the orthopedic surgeon. Furthermore, I would urge that those cases of what appear to be lumbosacral or sacro-iliac sprains which do not clear up in a reasonable time under the usual treatment should have the benefit of an orthopedic surgeon.

The medical profession is at last awakening to the realization that the vast majority of hernias are potentially present from birth and not the result of trauma or strain. As far back as 1896 Marcy of Boston stated: "The general opinion is that hernia is produced by some violent strain, for which in the general mind the term 'rupture' is a synonym, that is, a sudden giving way of the part involved. A superficial study of the case might lead one often to arrive at this conclusion. This is so exceptional that it represents a very minute fraction of the total."

In 1902 Coley of New York wrote: "So far as known at present traumatic herniae are produced or caused only by direct heavy application of force, at the site where the force was applied. It is extremely doubtful if traumatism alone, without an open funicular process in the hernial canal, can ever produce a hernia." Coley also then stated that, in 50,000 cases at the Hospital for Ruptured and Crippled, there were only four cases in which direct trauma played an important part.

Andrews of Chicago in 1907 said: "I am very skeptical of the role of even severe injuries in producing inguinal or femoral herina or any other form of hernia. There is often a time in the history of a hernia when even a physician does not determine that it is present. After some strain the patient will finally discover that he has a small inguinal lump or the physician will perhaps discover it. This does not prove, however, that it has just come into existence."

I have given the above quotations to emphasize the fact that, for at least twenty-five years, the leaders in surgery have recognized the congenital origin of hernias.

The workmen's compensation laws have probably done more than anything else to bring this fact to the attention of the rank and file of the medical profession, and, to a slight extent, to the laymen.

Lauffer of Pittsburgh, writing in 1919, stated that "In the first three years of the compensation law in Pennsylvania, over

4,000 hernias had been compensated in that State alone, or more than the real cases of traumatic hernia that have occurred in the Western Hemisphere since Columbus." From that statement you can readily see what a tremendous injustice is done annually to employers because of hernia alone. It, therefore, becomes our duty as physicians, whether in conversation with our patients or on the witness stand, to present these facts in their true light. Should any employee in the course of his ordinary duties suddenly have a hemorrhage from the lungs, we would consider straining or lifting as merely incidental, and the pathology in the lung as the primary cause. In that case it is very unlikely that any jury would award damages because of the hemorrhage. Such I believe in a few years will be our attitude toward nearly all hernias.

Important as is the x-ray in a general surgical practice, it is far more so in industrial surgery. How frequently it reveals the unsuspected linear fracture which has been diagnosed as a sprain; or the crack in the skull where no depression can be felt; or even the impacted fracture of the neck of the femur which may not give the usual diagnostic signs. In these and in many other conditions the x-ray gives the positive evidence which could not otherwise be obtained, and aids the patient to a quicker and better result. To the surgeon is given an added protection and a feeling of security and accuracy in his work. Just as valuable also is the negative evidence which the x-ray gives. How frequently we see a patient who believes himself suffering from a fracture. Even though the surgeon is convinced that there is no fracture the patient is not, and often the only argument which will make him change his mind is a large monetary one. When, however, he is confronted with clear x-rays showing normal bones he will almost invariably admit his error. The x-ray is invaluable as a check-up in the treatment of fractures. I believe that after nearly every fracture at least one or more radiograms or fluoscopic examinations should be made, but we should bear in mind that these radiograms may become dangerous weapons. Everything else being equal, the better the anatomical result, the better will be the functional result. But frequently we get good, satisfactory functional results where the x-ray shows an anatomical position anything but satisfactory. You can readily see, if these films are shown to an employee or his lawyer who is looking for trouble and who would magnify every defect, what a gross injustice would be done to the employer and also the surgeon himself.

To discuss every ill to which an employee is liable would obviously be out of the question and far beyond the scope of this paper. Suffice it to say that there is no injury too slight to demand attention. Every scratch or bruise should be reported at once to the plant office and iodine applied. If the foreman or whoever is trained to render the simple first-aid measures has the slightest doubts about the treatment, the patient should be sent directly to the surgeon. Both from the standpoint of

comfort, safety and prevention of deformity to the patient and from saving of expense to the employer, it is far better that a dozen men should be sent to the surgeon perhaps unnecessarily rather than let one develop a severe infection with its resultant deformity and possible loss of life or limb.

In conclusion, again I wish to emphasize that industrial surgery has problems peculiar to itself, and it behooves us to fit ourselves to handle properly this rapidly growing and important branch of surgery.

DISCUSSION

Dr. A. deT. Valk, Winston-Salem:

I am very much interested in this paper. One point Dr. Griffith brought out has given all of us a great deal of trouble, I am sure, and that is the traumatic back. I don't know of anything that presents itself so forcibly to physicians and surgeons.

Dr. Griffith mentioned one point which I think is essential in the treatment of these cases, and that is obtaining the confidence of the patient. I think the average case sent to the physician or surgeon by the company for which he works looks upon the physician somewhat skeptically and, I think gaining the confidence of the patient in these cases has helped more than anything else.

THE TREATMENT OF CRANIAL INJURIES

Drs. D. W. and Ernest S. Bullock and R. H. Davis, Wilmington:

The treatment of cranial injuries is undergoing physiologic revision, and rational measures are supplanting the older attitude of expectancy. This more intelligent consideration of these injuries is dependent upon a better understanding of the relation of traumatic edema and the tentorium cerebelli to the circulation of the cerebrospinal fluid.

CIRCULATION

The spinal fluid has its origin in the choroid plexus and the ependymal cells of the lateral ventricles of the brain. From this source the fluid passes through the foramen of Monro into the third ventricle, thence through the aqueduct of Sylvius into the fourth ventricle. Here it escapes through the foramen of Magendie and the lateral clefts of Luschka into the subarachnoidal space at the base of the brain. The cord is supplied by it and the fluid passes over the cerebellum and up through the incisura tentorii, following the arachnoidal space over the cortex. Through the medium of the arachnoid villi, the fluid passes to the longitudinal and other cranial sinuses.

The tentorium cerebelli is a fold of dura mater that forms a septum on which the cerebrum rests. Beneath this septum is the medulla, pons varolii and cerebellum. The opening in the tentorium is occupied by the midbrain and such slight space as may

remain allows the passage of fluid from the foramen of Magendie below to the cranial sinuses above.

PATHOLOGY

After severe head injuries, autopsy findings show that the swelling of the brain within the rigid limits of the cranial cavity occludes the opening in the tentorium cerebelli and renders difficult, or impossible, the injection of fluid from the arachnoidal space below to the space above the tentorium cerebelli. It is here, in the incisura tentorii, that anatomical conditions tend to impede the flow of the fluid. The circulation is further hindered by the swelling of the brain and the narrowing of the subarachnoid

Fig. 1. Black area indicating course of cerebrospinal fluid from the lateral ventricles to the basal systems, thence over the cerebrum through the incisura tentorii following the sub-arachnoid space where, through the medium of the arachnoid villi, the fluid passes to the cranial sinuses. (Modified from Jackson).

space in which the fluid circulates. Thus it is seen that cranial injuiries cause edema and swelling of the brain, and this embarrasses the circulation and the absorption of the spinal fluid. If ventricular secretion continues at a normal rate, there must be a continuous increase in the fluid tension between the area of obstruction and its source in the ventricles, until a tension is attained that serves to limit the secretion of this fluid. Before such a limit is reached, pressure is maintained in all the ventricles sufficient in the cerebum to smooth out the cortical convolutions, and in the fourth ventricle, to endanger life by injury to adjacent vital centers. Such circulatory obstructions are seldom complete, and under expectant treatment recovery often follows the recession of the edema and the re-establishment of the spinal cir-

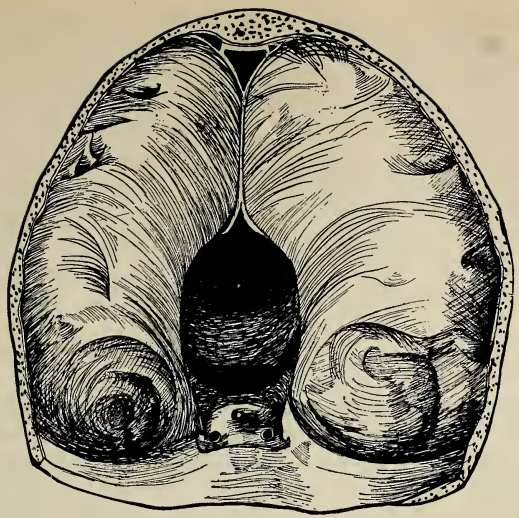

Fig. 2. Tentorium cerebelli showing opening (incisura tentorii) for passage of the cerebrospinal fluid from its origin below to its exit above, through the cranial sinuses. Site of obstruction in traumatic cranial injuries.

culation. A high pressure continued over twelve hours is thought sufficient to cause gliomatous changes in the cerebral cortex, and this gliosis to result in the complex called Traumatic Neurosis.

SYMPTOMS

Such classical symptoms as vomiting, high blood pressure, slow pulse and respiratory difficulty are all late symptoms, showing that the pressure of the spinal fluid within the brain is great enough to have already injured those centers upon which life is dependent. They are affected by pressure applied below the tentorium cerebelli. Experimental pressure applied above the membrane will not cause such symptoms.

DISCUSSION

The normal pressure of the spinal fluid in the lumbar region is equal to from five to seven millimeters of mercury in the child and from six to nine in the adult. About ninety-five per cent of all cerebral injuries result in some degree of cerebral edema. Following the primary shock and from four to six hours after injury, the pressure has risen in proportion to the injury sustained, and the resultant obstruction to the flow of the fluid. Under such conditions the pressure rise may be from twenty to sixty. If this reading is sixteen or more, symptoms of pressure would be expected. Experimental pressure applied below the tentorium cerebelli further confirms this.

Subtemporal decompression cannot be expected to relieve the symptoms of pressure, as the fluid is obstructed before it be-

comes supratentorial and, therefore, does not reach the temporal region. The swollen brain herniates into the opening and prevents the further escape of such fluid as may be present. After decompression, the spinal pressure, and therefore the pressure within the brain, can be shown to be insufficiently reduced.

Suboccipital decompression opening, as it does, below the tentorium cerebelli, would afford relief, but this can be more effectively accomplished by simpler means. Both these operations are mutilating and add severe trauma to that already sustained. Their severity invites delay, and while an expectant attitude is maintained irreparable damage may result from unrelieved pressure.

TREATMENT

When there is extradural or subdural hemorrhage, with focal symptoms, the pressure must be relieved by decompression at the affected area. The pressure of depressed fractures is best relieved at a later operation, after recovery is complete. Linear fractures require no treatment. Such occurences constitute about fifteen per cent of cranial injuries. Frequently in these cases, as in the remaining eighty-five per cent the dominant symptoms, together with the danger to life, are dependent upon pressure within the fourth ventricle and its effect upon the adjacent nerve-centers. The tension may be promptly relieved by lumbar drainage. This is effectively accomplished by one of the spinal mercury manometers now on the market. These permit the reading of the spinal pressure and escape of the fluid without disconnecting the instrument.

About four to six hours after injury the tension of the spinal fluid is read, and, if high, sufficient fluid is released to restore the pressure to normal. If the spinal fluid is bloody, it merely indicates the rupture of a vessel. The treatment is not different and the blood and small clots may be evacuated in this way. Spinal drainage is repeated from six to twenty-four hours, depending upon the apparent necessities of the case. The pressure usually increases for the first forty-eight hours, after which there is a gradual subsidence for two or three weeks. After each puncture, the pressure is read and enough fluid allowed to escape to bring the tension to normal. After readings of from twelve to sixteen are obained, the drainage may be discontinued, unless stupor or headache indicates the necessity for repetition. After several weeks a final reading is taken to show that no chronic state of hypertension has resulted from the injury.

Lumbar drainage prevents excessive ventricular pressure and allows only such injury as results from interstitial traumatic edema. The most isolated practioner could treat such cases on a parity with those working in the best hospitals, and with a time-saving promptness that is invaluable. Using this method in three hundred cases at the Cook County Hospital, Jackson reduced the general mortality thirty-three per cent, and after three years of

observation notes that "The hitherto late effects, known as traumatic Neurosis, have been generally avoided."

DISCUSSION

Dr. J. W. Gibbon, Chairman, Charlotte:

This is a very interesting paper of Dr. Bullock's, and should be of interest to every man in this day, when so many accidents occur as a result of automobiles. This sort of injury comes within every man's province and if the procedure is followed great good may be done.

Dr. J. T. Burruss, High Point:

In the first place I want to thank Dr. Bullock for the very clear and concise way in which he has pointed out to us the circulation of the fluid on the ventricle through the brain into the spinal canal.

A few years ago I had service with Dr. Cubbins of Chicago. He related a number of cases that go to prove or rather to substantiate Dr. Bullock in his position. In our Army hospital we saw a great many of these cases and, working with him, we invariably resorted to the Lumbar puncture when we thought the case was one evolving brain edema. The spinal manometer was used in all these cases, and the pressure was reduced to ten points. I just want to say, in this connection, that if we will more frequently use lumbar puncture and if we will more frequently use the spinal manometer I am sure that we shall be surprised to see and to know all the information that is brought to us because of this. I most heartily endorse it, Dr. Bulluck, and I congratulate you and this Society upon this splendid paper.

I wish to relate a case that was brought into my hospital hospital some little while ago. The man had been thrown from an automobile and was found by the roadside in an unconscious state He was brought into the hospital in a semi-conscious condition. We did a pressure reading about six hours after the admission, to find an increase of about twenty-one or twenty-two points. The spinal fluid at this time showed a number of blood cells and we, of course, thought we had some injury to the cord *per se*. After tapping the spinal canal we noted a decided improvement. We gave him three punctures, and in a week's time the fluid had virtually cleared up.

I have seen a number of decompression operations in cases of this kind more in the temple region and in the parietal region, to relieve pressure, and the patient unimproved. I don't recall a case where the fracture was not found and where the bone was not seen to be pressing upon the dura in which immediate beneficial results were not obtained from the puncture. I remember a case where the patient had seven or eight punctures, and soon after each puncture you could observe a clearing up.

I am very glad to have had the pleasure of hearing this paper.

Dr. O. L. Miller, Gastonia:

It has been my misfortune in the past three or four months to see three cases of tuberculous meningitis where we have had to drain off spinal fluid. In the first I was taught to drain the spinal fluid off from the Sisterna magna, at the base of the brain. Since then I have taken off the spinal fluid by going into the cisterna magna each time and in each case. I just report this, as it is not a very common way to drain the spinal fluid, but for the sake of those who haven't done it I want to mention it, as it gives relief very quickly and safely. The pressure sometimes comes on in a very bad way before they pass away, and as soon as you puncture the cisterna, in a very few minutes they are relieved and in a very short time will take some food and some nourishment, if not too far gone. In a case we had recently we took off safely twenty-five or thirty-five c.c. of fluid twice a day for several days.

It just occured to me to report this in connection with Dr. Bullock's paper. We have had some experience in these cases which we knew were going to die, and they were relieved and made comfortable in their last days by going in the spinal canal at the base.

Dr. T. C. Bost, Charlotte:

I did not hear all of Dr. Bulluck's paper, but I believe the general tone of what I did hear, was that he advocated rather conservative treatment in intracranial injuries. Happily the day has gone by when there was some tendency to consider indefinite head injuries with unconsciousness as an indication for surgical interference. Indeed some went so far as to consider such conditions as analogous to acute abdominal conditions demanding an exploration. Notwithstanding the fact that it is impossible to explore intracranially in the same sense that an abdomen can be explored.

Work during the World's War, and subsequently notably by Jackson, of Chicago, and others, tend to show as Dr. Bulluck has pointed out, that increased intracranial pressure can be dealt with effectively by reported lumbar punctures, accomplishing in a measure what is sought in a decompression operation.

It is my policy to operate only on the cases that have rather definite indications such as a decompressed fracture or some other condition producing local symptoms.

Dr. Bulluck has given us an excellent paper and a good outline to follow in dealing with these cases.

Dr. Bullock, closing the discussion:

I certainly appreciate the interest of these gentlemen, and Dr. Burrus's complimentary remarks.

As to Dr Miller's suggestion in regard to draining off the cerebospinal fluid from the cisterna magna by puncturing that area instead of the lumbar region of the cord, it would seem that the result would be the same. There would be no difference in tapping the cisterna magna or the lumber region so far as

relief is concerned, since the obstruction is at the incisura tentorii and in any place of exit below that would relieve the tension. It seems to be simply a matter of convenience as to the site selected for the relief of the pressure.

RENAL AND URETERAL CALCULI

Foy Roberson, M.D., F. A. C. S., and W. M. Coppridge, M.D.
Durham

The study of renal calculi has, during the past decade, shown considerable advancement in the problems of diagnosis and treatment. It is well recognized that the presence of a stone in the renal tract is attended with grave possibilities, and that early diagnosis and treatment are essential for the preservaion of kidney function.

Concerning the etiology of stone formation it is found that no one theory can at present explain the various phases of the subject. About forty years ago Rainey and Ord expounded the theory of molecular coalescence in the presence of colloid material. According to these workers, the shed epithelium from the kidney pelvis or ureter acted as the colloid material upon which the organic molecules coalesced to form crystalline masses. Shattuck has in a large way exploded this theory by pointing out that the genesis of crystalization is always in a super-saturated solution and that in such a solution crystals will form independent of colloid material. The growth of crystals after they are once formed go in a solution less than saturated. According to Cabot, infection is generally regarded as having little to do with stone formation. Bacterial action will greatly influence the growth of stones by changing the urinary reaction, but it cannot be proved to be an important factor in the beginning. Infection accompanies stone in practically all cases, especially when obstruction occurs. Obstruction or retention of urine in the renal tract does, we think, play an important role in stone formation. In such a condition the urine is allowed to remain in the tract longer than normal and this, along with urinary supersaturation, probably explains the formation of many stones.

A stone may consist of any of the crystaline substances of the urine, the commoner being uric acid, urates, oxylates and phosphates The first three occur only in acid urine; the last in alkaline urine. It is seldom that a stone is composed of purely one substance, because the reaction of urine so often changes; layers of various substances are at times deposited, giving the stone a laminated formation. It is practically impossible to determine by ordinary inspection just what salt predominates in any given stone. The occurrence of uric acid stones is exceedingly rare, but both uric acid and urates are very common constituents along with calcium oxylate, the latter being perhaps the most common constituent of stone in this country. Xanthin, cystin and indigo occur very rarely, but are more likely to occur in pure form than any of the

other constituents. Very little dependence can be made on color as a guide to the composition of a stone. Phosphatic calculi are usually white, while the ones composed largely of oxylate are commonly dark. The urates are also likely to be dark brown or yellowish in color.

Climate has long been thought to play an important role, and it is true that stone is more common in some localities than in others. A satisfactory explanation of this cannot be expressed, since there are not found any peculiar conditions that are common to the various stone areas.

From the foregoing statements it is fair to assume that from a practical standpoint the etiology and composition of calculi are far from being entirely understood and offer very little of practical value. On the other hand, the effect of calculus formation and growth presents a very comprehensive and interesting study. These results of calculi may be considered under the general term of "calculus pathology".

It is convenient to deal with the pathology of the stone in the kidney and ureter under one head since the results, generally speaking, are the same. Possibly the earliest result is obstruction. Whether the stone lies in the pelvis of the kidney or in the ureter there will occur some retention—this of course, being much more marked in case the ureter is involved. Retention of urine anywhere in the renal tract must always be considered of grave importance. Along with it occurs a decrease in kidney function even before infection has set in. When this has occured we have added to the back pressure the element of toxemia and destruction of renal tissue. The morbid anatomy follows, the pelvis or ureter, or both, distend and enlarge from the constant pressure. The renal substance in many instances in encroached upon and destroyed by the bacterial action. These conditions result in what we commonly know as hydronephrosis and pyonephrosis. It is remarkable what an amount of renal destruction may occur from comparatively small stones, and this with little or no discomfort to the patient. It is to be remembered that the retention and infection around stones may be and usually is decidedly intermittent. Drainage occurs at times and the condition is temporarily relieved only to return or to persist to a slight degree. Should at any time complete obstruction occur, the more serious condition—calculus anuria—may result.

As, to symptoms the variation is from the most acute, agonizing attacks of renal colic, which may be caused by a very small stone in the ureter, to the practically symptomless stone which may even destroy the entire kidney before its presence is realized it often being discovered accidently. In the case of kidney stone probably the most important symptom is backache, because if the stone is embedded in the kidney substance the individual will not suffer from renal colic. However, in the case of ureteral concretions the predominating symptom is usually severe attacks of renal colic. Should the stone here be small enough

to pass the attacks are only transient, but should the ureteral stone become lodged in the urinary tract it will cause frequent attacks of agonizing pain and usually bladder symptoms. The case of stone embedded in the kidney substance, as before stated, the predominating symptom is usually pain in the back, and the stone may remain there for years without causing any great damage, or may become so large as to finally destroy the entire kidney.

With the stone located in either the kidney proper or the ureter the digestive symptoms are exceedingly constant, so much so that the symptoms are readily confused with chronic appendicitis, cholelithiasis or other intra-abdominal condition, and it is only by thorough and exhaustive study in each case that one can be sure of diagnosis. The history is of considerable value, since most stones produce definite symptoms physicians examination will usually show a tenderness in the kidney area, and often the organ is slightly enlarged. Deep percussion, using the fist, over the suspected kidney will cause acute pain in most cases. The examination of the urine is of great value; practically all cases or renal calculus will show at least a slight trace of albumin. Albumin in an otherwise negative urine, in the absence of any signs or symptoms of nephritis, should always make one suspicious of stone. Microscopic and macroscopic blood is common in stone, the pressure of a few blood-cells in the urine usually calls for study to eliminate calculi. Pus, or at least a few leucocytes, is usually present; in the early cases with good drainage the leucoctytes may be rare or even absent. Study of the crystals occuring in the urine is probably of little value beyond often bespeaking urinary concentration. Crystals may change so quickly depending upon the various degrees of acidity and alkalinity that their presence or absence is of little concern. In none of the cases we have seen has the urine been absolutely normal, and for this reason we feel that complete and repeated urinalysis is of considerable value, as is also the phthalein test when done on each kidney separately. A slight to marked impairment of function is noted in practically all cases of renal calculus, depending on the amount of retention, infection, etc., that has taken place. The x-ray is of great value but it is, no doubt, unsafe to rely upon unsupported x-ray evidence. A very small proportion of stones—those composed largely of uric acid—do not cast a shadow and are naturally missed by the x-ray; shadows often occur which can not be definitely interpreted. Calcified lymph nodes, phleboliths and other concretions may be mistaken for calculi. Recent refinements in x-ray technique have done much to bring out shadows of very small calculi and other concretions which are often impossible to interpret without the aid of the crystoscope and ureteral catheter. A few renal calculi that cast indistinct shadows, or no shadow at all, may be made to show after saturation with one of the opaque media, such as sodium iodide or bromide. A pyelogram is made, and after the solution has run out another plate is made, the stone having absorbed a

slight amount of the solution will then show more distinctly. The catheter in the ureter will largely rule out calcified glands and phleboliths, especially if catheters or bougies of varying risistance are used and plates made at different times, using first a flexible catheter and later a rigid bougie; if the shadow lies in line in each plate it is unquestionably a stone.

As outlined above, the diagnosis of ureteral stone requires the combination of x-ray and cystoscope. Recently we have had three cases completely negative with the x-ray but diagnosed by ureteral catheterization and delivered by ureteral dilation. Obstruction is usually met with the catheter; by manipulation most stones can be passed and the catherter inserted into the kidney pelvis, and x-ray then taken will reveal the stone lying alongside the catheter. In a few cases we have had a fairly large catheter cover over and obscure a very small stone. This can be remedied by making a plate before the catheters are inserted and after they are removed. The opaque medium may also be used to show up ureteral stones in the same way as in the kidney. Kelly's wax-tipped catheter is valuable especially when the Kelly endoscope is used, but is rather unhandy and unreliable when used through the indirect cystoscope. We feel that the most omportant points in the diagnosis of ureteral stones are, first, accurate and if necessary, repeated x-ray examinations combined with ureteral catheterization and observation, and, second, prolonged observation of symptoms, urinary findings and physical signs. No doubt many small stones, lodged in the ureters, are going undiagnosed and unless they are passed will become larger and produce serious pathology.

When it comes to treatment we would preface our remarks by saying that we believe that every stone—all other things being equal—should be removed from the urinary tract should it not be able to move automatically. In regard to medical treatment, it may be beneficial to regulate the patient's diet and habits, especially as regards exercise, the drinking of fluid and the eating of rich food. Our feeling is that, in the case of a stone lodged ether in the kidney itself or the pelvis of the kidney, the open operation is the method of choice, and if it is not deferred until the general health of the patient is impaired or until the kidney itself is so diseased as to make the operation unusually hazardous, it is a very safe and satisfactory procedure. In our experience it makes no difference as to whether the stone has to be removed from the kidney substance itself or through the posterior wall of the pelvis of the kidney, healing practically always taking place without the formation of permanent urinary fistulae. Some of these cases never drain a drop of urine; in others there will be free drainage for a week or two, but healing usually takes place after this time.

The treatment of the ureteral stone may be considered under three heads—depending upon the type of case. The first class will comprise those cases in which the stone, after a severe attack

of pain, will pass and the patient obtain relief unaided. The usual hypodermic of large doses of morphine, the use of heat and counter-irritation, are all that is required in these cases. We have followed in the custom if uteral catheterization after such an attack in order to assure ourselves that no more gravel remain in the ureter, and at the same time irrigation of the kidney pelvis and ureter with a one per cent solution of Silver Nitrate in order to care for any infection that may have occurred. It is well to remember that most cases of renal colic can be almost immediately relieved by ureteral catheterization, the catheter passing round the stone and securing drainage. We have not failed in any case to secure relief for the patient by this method.

The second class is that in which the stone is not immediately passed and the patient continues to have symptoms or positive findings. By far the majority of ureteral stones of this class may be treated and removed through the bladder by cystoscopic manipulation. Dr. A. J. Crowell has done much to impress upon the profession the efficiency of these methods, and it is largely through his success that this form of treatment has been developed. (2). The method consists of locating the stone, passing it with catheter or bougie, with the catheter left in situ for twenty-four hours, producing dilatation of the ureter and also tending to arrest spasm. One ounce of a proper solution of Novocaine is then injected through the catheter and this is followed by a few cubic centimeters of sterile mineral oil. The treatment may be repeated in a few days, larger catheters being used or several catheters in the same ureter. The value of this method is the lack of risk to the patient and the production of drainage in infected cases and the corresponding preservation of the kidney function. In toxic and infected cases this factor is all important. Every case of ureteral stone should have repeated efforts by this method. If nothing more can be done than to secure drainage for a few days, the chances at operation are made safer. A patient with a ureteral stone may be said to be comparatively safe if drainage through a catheter can be maintained, and nearly all cases that can be passed with a catheter can be delivered in that way.

The third class comprises those stones, usually of long standing, that have become impacted and adherent with fibrous tissue. In such cases catheters and bougies cannot be passed around them, and surgical removal by operation is indicated. This class in undoubtedly small, but we have recently seen three such cases. The operation by the extraperitoneal route is applicable to most of this type. In some of our cases the stone was so low in the ureter that it was secured by suprapubic incision through the bladder. Good results with prompt recovery were obtained in these cases.

To summarize, it is well recognized at present that so-called attacks of kidney colic call for a careful urological study. Small stones must be removed-if they remain they become larger and

by obstruction will undoubtedly produce serious injury to, if not destruction, of the kidney.

1. Bransford Lewis. A New Sign in the Diagnosis of Ureteral Stone. Journal of Urology, Vol. VIII, No. 6, P. 487. June 1922.

2. A. J. Crowell. Removal of Ureteral Stone by Cystoscopic Manipulation. Journal of Urology, Vol. VI, No. 3, P. 243, September, 1921.

DISCUSSION

Dr. J. T. Burrus, High Point:

I desire to discuss just a few minutes this paper and commend the Doctor for referring to his ureteral work and placing credit where credit is due, and giving Dr. A. J. Crowell and his staff credit and honor for showing us how to do this very important work. Dr. Crowell's work has, perhaps, a greater reputation than any other in the State. I am delighted that we have an institution in North Carolina that has accomplished such wonderful results.

I just wanted to relate a case that has recently been brought to my notice, more to show bravery than good judgment. This was a woman thirty-five years old, who seven years ago had a kidney removed from her left side. About two years ago a stone was discovered in the pelvis of the kidney. This stone had gradually grown until discovered in the right kidney. At times this woman has looked as though she would die, but by using a ureteral catheter and relieving her of a great amount of pus from the pelvis she tided over what seemed to be a crisis. About six weeks ago this patient came under my observation. I advised, with some of the leading men in urology, that not to remove it meant her death and to remove it might mean her life. About two and a half weeks ago, I attacked that stone with a posterior nephrotomy, opening it just at the junction of the pelvis, and removed a stone that almost entirely filled the pelvis, and with it about a half ounce of very white pus. The stomach symptoms it was associated with cleared up very quickly. The stomach began to take food and the kidney began to secrete. I am very happy to say that that woman had a very good recovery. The point is this: I think we should be very careful in removing kidneys. I believe that if a stone is in a kidney out of the pelvis, and no symptoms are induced thereby, it is best to leave it alone, unless a specimen obtained by ureteral catheterization shows pus in increasing quantities.

I am very glad to have had the pleasure, Dr. Coppridge, of listening to this splendid paper, and again I want to say that it is through Dr. Crowell and his associates and their splendid efforts that we have spared our patients many useless operations on the kidneys, and as a result perhaps many lives have been spared.

Dr. J. D. Highswith, Fayetteville:

There is nothing that I can add to Dr. Coppridge's paper. I think he certainly covered the subject very thoroughly.

I want to emphasize one point that he made, and that is the early diagnosis and removal of stone. The sooner this can be accomplished, the better. In our experience it is astonishing how long some of these ureteral calculi will remain impacted in the ureter, but the destruction of the kidney, while it may be in some cases slow, is sure to take place sooner or later. There is a complete destruction of the kidney unless something is done. A case we have had recently is that of a white male adult who had a calculi in the lower portion of the right ureter, and also one in the left kidney pelvis. His symptoms dated back for twenty years. When we finally cystoscoped him his condition was serious.

I would like to know what your opinion is regarding stones discovered accidently in a routine examination, for instance, when you examine a patient for a fracture of a rib and discover that he has a stone which has never produced any symptoms.

(At this point in the discussion, Dr. A. J. Crowell Charlotte, showed some lantern slides illustrating the subject.)

Dr. Coppridge, closing the discussion:

I just wish to thank Dr. Crowell for his demonstration. It is, of course, recognized everywhere that Dr. Crowell is the father of this ureteral work, and it is certainly a pleasure to have him here to discuss this paper.

CLOSED METHOD OF TREATMENT OF EMPYEMA VERSUS RIB RESECTION

(*With Report of Ten Cases of Each*)

G. Carlyle Cooke, M.D., Lawrence Hospital, Winston-Salem

Since there is great diversity of opinion as to the better method of treating empyema, and as there are many who still adhere to the open treatment, it seems that there should be a more or less standardized proceedure employed, and as this can only be brought about by the advantages of one method outweighing all others, it is the purpose of this paper not to present anything new, but to point out the merits of the closed method over the old very unsatisfactory rib resection.

In considering the treatment of any disease process the pathology, of course, must be understood, in order that scientific counteractions of the different processes may be effected in rotation; otherwise the treatment is empirical. The etiology and symptomatology will not be discussed, as the diagnosis can always be made so easily by the use of a needle and the exact location so accurately mapped out by the use of a steroscopic roentgenogram.

The pathological lesion of empyema and pleurisy with effusion, both of which are considered in this discussion, occur in a cavity in which there is normally more or less a vacuum with a negative pressure of about 8 m.m. H.g. on expiration to 12 m.m. on inspiration (1). This suction force serves in place of an anatomical structure to pull the lung equally in all directions to expansion with

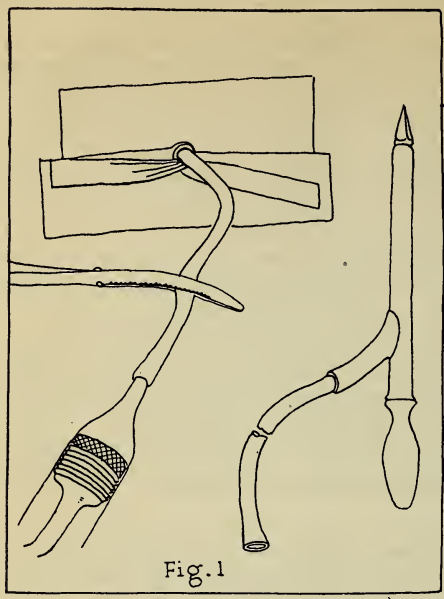

Fig. 1

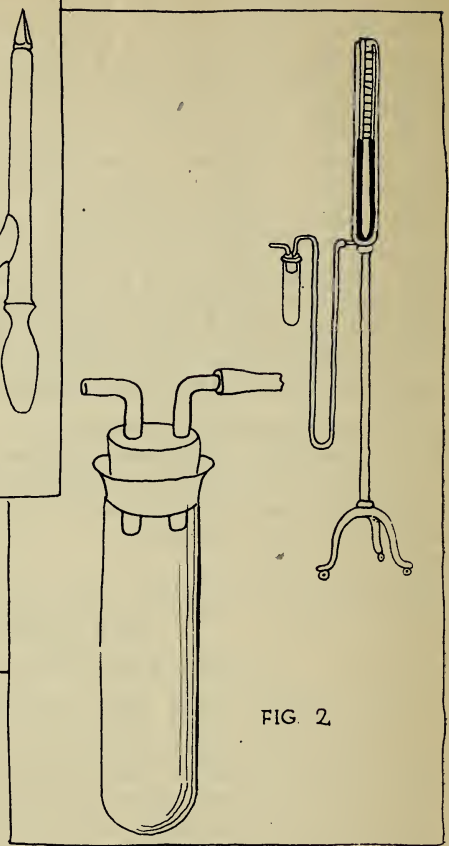

FIG. 2

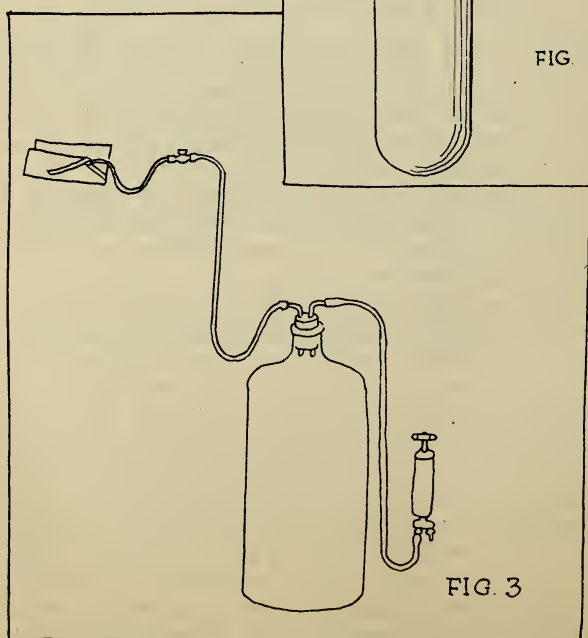

FIG. 3

the expansion of the chest cavity during inspiration, and not interfere with the change in position of the lung surface with relation to the inner surface of the chest wall during respiration. Regardless of the causative organism, the mechanical derangement is the same. The fluid always gravitates to the lowest point available, as the negative pressure does not alter the laws of gravitation. If there are no adhesions between the visceral and parietal layers of the pleura the fluid will fill up from the bottom, and the negative pressure will not be neutralized until the lung is completely collapsed or has no more tendency to contract of its own normal resiliency. Therefore, it depends on the modus operandi of the causative agent as to whether the serous surfaces will become adherent so as to hold the lung in expansion before a sufficient amount of exudate has collected to deplete the vacuum, or to cause a barrier against the fluid in lines of cleavage and cause the formation of thin sheets of fluid at different levels, and the surrounding line of adhesions serve to pull the lung in expansion with the expansion of the chest during inspiration. If the exudate begins as a fibrinous one before fluid collects, one can readily see how these adhesions occur holding in their meshes pockets of pus of later formation. This is nature's way of tending to limit the disease in two ways; first by limiting the capacity for fluid collection; secondly, by maintaining respiration and circulation of the affected lung. This same process holds true in massive effusions with complete collapse of the lung.

Any fluid collecting in the pleural cavity contains in it fibrin-forming substances, and the resulting fibrim, which will form sooner or later, bridges the visceral and parietal pleura. Fibrin stimulates the growth of fibrous tissue, (2) or fibrous tissue is prone to grow luxuriantly in fibrin. It seems to use fibrin in its own formation, so that in this way adhesive bands connecting the two pleural surfaces later contract, tending to pull the lung out, and if this is not accomplished the fibrous tissue will increase at the expense of the fluid and hasten its absorption, at the same time binding the lung surface to the chest wall.

If this process is allowed to continue and the infection is not overwhelming, there may be walled-off areas of fluid which are so often broken up at rib resection with the finger, frequently denuding areas of the lung surface, opening up new avenues for septic absorption or causing the infection to spread back into the lung to the extent of lung abscess or secondary bronchiectasis.

The above process may take place in the presence of fluid but if there is a pneumothorax the pathology is entirely different in the first place, the pleura is much less resistant to infection in the presence of pneumothorax than in any other state, especially when it comes on suddenly. In my opinion this accounts for many cases which rapidly succomb to rib resection, together with the opening of fresh tissue to the infection both of the pleural surfaces and chest wall. Air does not float fibrin, so when a lung is collapsed by air the fibrin-forming substances poured out on

the pleural surfaces stimulate the thickened pleura to increased stiffness, preventing the expansion of the lung completely with scar tissue, which, when the cavity is obliterated, will affect it by filling the cavity with granulations or by pulling the chest wall in on the lung, thereby marking the victim with asymmetry of the chest for life, as we almost always see following rib resection. It is needless to note that the scar from thoracotomy is as unsightly as any other operative label, and a point which I think should have a great bearing in the choosing of any operation.

Another condition which is frequently overlooked when considering the pathology of empyema, especially where there is a large quantity of fluid, is more or less displacement of the mediastinal structures. In massive effusions the opposite lung may be encroached upon by the pressure and the heart is held between the two lungs also suffering from pressure. The great vessels, especially the veins, may have their lumens compressed, hindering the return flow of blood to the heart, in this way accounting for the great amount of cyanosis and dyspnea seen so often, for the respiratory distress cannot be accounted for by the lessened lung capacity (3) in a great number of cases; but is due to toxemia from the above, toxemia of inflammation and its products, the alteration of the mediastinal circulation, and the effects of the change in position of mediastinal structures on the cardiac and pulmonary nerve plexus. When the condition comes on slowly these structures may adapt themselves to the new positions so that the functions may not become markedly altered, but any sudden change in these relations are considerations of most importance, which will be referred to under treatment.

As it is an admitted fact that thoracic suction plays an important role in maintaining a return flow of the venous blood to the chest, one can readily see how any condition lessening this function would materially alter the general circulation—another point of much importance in the consideration of the proper method of treatment.

TREATMENT

The most efficient method of treating empyema should be one which would most effectively rid the sufferer of the products of inflammation —in other words drain the abscess and combat the causative agent—and at the same time maintain as nearly normal condition of the body as a whole as possible. In the first consideration, which I think can be well applied here, the treatment should not be left to the mechanical procedures alone, and I mention the importance of food, comfort and rest so that their importance may not be lost sight of. When any active boiler is leaking steam, the only resort is to increase the fires until the leak is stopped. Bodily resistance is entirely dependent upon the nutrition of the individual, which is gained only by plenty of good food, warm body and rest. Preparations must be made to prevent all muscular exertion and mental anxiety as far as possible.

In discussing the operative methods, the one of preference will be described and the points of merit will be noted in turn. The patient is placed on the table in a position which is most comfortable to him, not upon the unaffected side any more than is necessary to gain access to the most dependent point of the fluid collection, and as only a small opening is to be made in the skin under a local anesthetic, this can usually be done with the patient on his back. A sharp trocar that will admit a soft rubber catheter of 18 or 20 F., which has been perforated on the opposite side from the regular eyelet, is inserted through the chest wall. As soon as no resistance is felt, the obturator is withdrawn sufficiently to allow the catheter to be inserted through the opening at the Y without allowing the escape of any pus or the egress of any air into the chest. The trocar which has been especially designed for this method is best, but if one is not available any ordinary gall-bladder trocar, or a straight one will suffice, as the procedure can usually be accomplished so quickly that any leakage will be negligible provided the catheter fits the trocar, which is very essential. The outer end of the catheter is clamped, and when the entering end is in the pleural cavity, not over 3 c.m. approximately, the trocar is withdrawn, leaving the catheter in place. Before any fluid is allowed to escape the catheter is well anchored to the chest wall, and if the skin incision has not been made too large this can be done with adhesive. The only dressing necessary, and the only one permissible for an air-tight joint, is a small piece of gauze wrapped around the catheter and tightly applied adhesive strips as illustrated in figure 1.

Now, in order to determine accurately whether or not the negative pressure has been deplenished or whether there is a positive pressure in the chest. I have improvised a water manometer about 20 inches (or 50 c. m.) long, graduated in m. m. Hg., and a connection, so that the fluid escaping, if any, will indicate the pressure on the manometer by displacing the air in the recepticle attached, as shown in illustration (Figure 2). If there is marked positive pressure, the catheter is clamped and no more pus allowed to escape until it can be attached to a permanent drainage recepticle (Figure 3), with a stop-cock interposed so that the flow can be regulated at will. As soon as this is done the patient is returned to the bed and the massive effusion, with distention of the chest wall, displaced mediastinal organs, and the other conditions mentioned under pathology are slowly abated. Varying with the amount of fluid present, the time utilized in completely evacuating the chest ranges from a few minutes to thirty-six hours. In this way the risk of shock can be entirely eliminated, and the time that the patient has been kept from his room is so short that any mental anguish is nil, together eliminating a general anesthetic or extensive local, either of which has its disadvantages in doing a rib desection. Figure 3 shows the type of vacuum which is used at Lawrence Clinic, easily obtained, merely a 4 liter bottle fitted with a rubber stopper which has been pierced for two L-bent glass tubes. One tube is connected to the stopcock

in the catheter and the other to a suction pump with a back flow valve. As the fluid is slowly withdrawn by creating just enough vacuum in the bottle to maintain a constant desired flow, time is allowed for the complete readjustment of the thoracic organs and to restore the breathing capacity of the collapsed lung, which is held in expansion equal to the evacuation of the fluid without causing shock, by allowing the lung to take up its increased circulation gradually. Frequently a large clump of fibrin will clog the catheter, but this has always been satisfactorily overcome by attaching the catheter to a large glass piston syringe and forcing salt solution through the catheter till the clot is dislodged. If then it is impossible to remove the fluid, one or two ounces of chlorozene solution (1%) is instilled and allowed to remain for an hour. The catheter should always be clamped before it is detached from the stopcock or syringe, for if an air bubble enters the cavity it will rise above the fluid and cannot be withdrawn until the fluid is completely evacuated.

If the fluid flows freely and no fibrin blocking occurs, the vacuum can be left in place so that every drop of fluid will be withdrawn as fast as it accumulates, and the cavity only irrigated daily with a 1% chlorozene solution. When there is a great amount of fibrim and clots the vacuum may be left off for a few days and then cavity irrigated every two hours with the chlorozene solution, about two ounces, each time leaving in an ounce to effect solution of the clots. Each day, after the cavity has once been emptied, the fluid will decrease until finally the pleural surfaces will have become adherent holding the lung in an expanded condition. Then the cavity may only be irrigated and aspirated once daily till the exudate becomes clear, when the catheter can be withdrawn and the wound dressed tightly, as the patient's resistance will have increased so that he will take care of any further accumulation and recover entirely. However, it is a good rule to watch the patient three days longer and note any temerature rise, in case any further accumulation occurs. If it is necessary to reestablish drainage the catheter can be reinserted through the old track without the use of a trocar and the treatment repeated till well.

There are certain essential factors that must be strictly observed for the treatment to be a complete success, and some of these, I will admit, are difficult at times, but if one will keep patience and persistent effort, the results will be well worth it. First, the catheter must not be introduced too far into the pleural cavity, as it may double up against the walls and kink, thereby obstructing its lumen, or the end may project upward above the fluid level and not drain the most dependent portions, whereas if the eyelet simply remains clear of the chest wall the drainage will be complete. It is well to have the catheter marked in centimeters so one can tell just how far in it is. Second, all air must be strictly excluded by carefully clamping the catheter before changing any connections. Third, persistent irrigation with chlorazene solution as frequently as necessary to dissolve and wash

out any fibrin that may be present to prevent complete drainage. Fourth, the catheter should be carefully watched and kept secure, and all precautions used to prevent the patient from pulling it out.

COMPLICATIONS

Probably the most alarming incident, which sometimes occurs, is a sudden minute rupture of the lung surface into a bronchus and the development of pneumothorax by allowing air to escape into the cavity from the lung, the latter collapsing just as if air had been admitted through the chest opening. I have seen this occur in three patient's but in none caused untoward results. When it occurs, suction and irrigation should be discontinued except, at most, once daily, and the opening will heal over in a short while and the lung can be reexpanded. Care should be taken not to force fluid into the chest at this time, as it may gain entrance to the lung and cause the patient distressing expectoration. Aspiration should not be discontinued more than forty-eight hours even in this condition, because sometimes a tag of fibrin will fall over the opening in the lung and act as a valve, so that on inspiration air will be sucked into the cavity but cannot be expelled and the patient will "pump himself up" so to speak, even to the extent of causing death, but if aspiration is kept up occasionally this will be avoided.

Another condition which some times arises is hemorrhage into the cavity, which occurs as a result of the chlorazene solution eroding the granulation tissue. This is of no serious import, as it will discontinue in a short while after the irrigation is stopped.

Sometimes a collection of pus may become sealed off between lobes, forming an interlobular abscess. This, of course, cannot be evacuated except by open operation, but it will often be absorbed or, when open operation must be resorted to, plural adhesions will prevent lung collapse and the drainage is a simple procedure.

APPLICATION

The closed method of treatment is applicable to every pleurisy with effusion where continuous drainage is essential to cure.

NINE CASES TREATED BY RIB RESECTION AT WINSTON-SALEM CITY HOSPITAL

No.	Number of Dressings	Days Treated in Hospital	Complications	Result on Discharge
1	10	10	None	Discharged draining
2	200	210	None	Discharged draining
3	20	30	None	Discharged draining
4	43	43	None.	Discharged draining
5	20	14	None	Discharged draining
6	15	11	Bronchial fistula	Died
7	14	14	None	Discharged draining
8	24	24	None	Discharged draining
9	17	17	None	Discharged draining
Average	39	26	1. Bronchial fistula	1 Death

All the patients left the hospital draining and no follow-up record was kept, so that final results cannot be given.

CASES TREATED BY THE CLOSED METHOD AT THE LAWRENCE HOSPITAL

No.	Number of Dressings	Days Treated	Complications	Results
1	4	19	Pneumothorax	Cured
2	7	27	None	Cured
3	6	25	Abscess of chest wall	Cured
4	8	30	None	Cured
5	5	13	None	Cured
6	5	30	None	Cured
7	5	24	Interlobular abscess	Cured
8	5	20	None	Cured
9	5	30	None	Cured
Average	6	24	1 Pneumothorax 1 Abscess of chest wall 1 Interlobular abscess	All cases were healed at least 3 days before discharge from hospital. No deaths. Discharge — no scar larger than a dime.

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DISCUSSION

Dr. Benj. J. Lawrence, Raleigh:

I would like to say, to begin with, that this method is entirely new to me,and I want to congratulate Dr. Cook on his presentation of the matter and to say that I am very much impressed with it. I agree with Dr. Boice in that we haven't practiced any rib resections in several years. We prefer simple incision between the ribs and tube drainage.

I would like to ask Dr. Cooke if he feels that he is ready to advocate this treatment for all cases of empyema. Personally I am somewhat skeptical, and I wonder if a small-sized catheter would drain all cases. However, if the method is proven satisfactory it would certainly be a revelation. I think it should be given a great deal of consideration and I would be glad to follow it up later.

Dr. Cooke, closing the discussion:

I certainly appreciate the discussion. In regard to Dr. Tayloe's discussion, there is no doubt that the Carrell treatment, when properly carried out will sterilize the wound, provided the patient

survives the initial operation, but even then the cavity is still very large and no way for it to become smaller except by filling up with granulation tissue which later contracts, making the chest wall very rigid.

Now, in answer to Dr Lawrence's question, I wish to say that we have not hesitated to use the method in any kind of empyema regardless of the size of the effusion or type, provided we thought drainage was necessary, and I have had no untoward results except the one complication that I mentioned, namely, the interlobular abscess.

DEEP RADIATION THERAPY IN INOPERABLE CARCINOMA OF UTERUS AND BREAST

Julian M. Baker, M.D., Tarboro

In the treatment of malignant neoplastic growths, it is recognized that any intelligent application of agencies available should have an acceptable theory as to the etiological factor, to which the utmost knowledge, with the multiplicity of the theoretical views eminating from the research laboratories, and the large number of scientists engaged in this work, a practical radiotherapist stands in confusion and bewilderment, with the privilege of adopting any of the many which have been and are continually being advanced. That theory should be accepted which affords the most plausible and most satisfactory explanation of existing phenomena to a reasonably intelligent person. We have accordingly adopted the theory of cancer etiology as an intracellular perversion or normal cellular metabolism, due to an interference with the harmonious co-ordinating activity of the intracellular harmone, and that of other endocrine glands, the interference being due primarily to traumatism in some form. At this time this theory does not call for elaboration; it gives however, a working basis for intelligent application of the agencies used for the elimination of the resultant neoplasms.

Deep roentgen therapy is understood to mean the application of that quantity and quality of homogenous roentgen ray from which the soft or long wave lengths have been removed by filtration through suitable media, and only the short wave length of hard rays reach the skin, these rays being shot off from the target of the Coolidge tube with such velocity that comparatively a small percentage is absorbed in the superficial layers of tissue. By energizing the tube with a high enough voltage, thereby permitting sufficient distance between the target and the object radiated, practically a homogenous ray is obtained, and all points within the port of entry receive the same radiation energy, the degree of penetration being estimated by well determined laws of physics, and dependent upon the distance from the target, the difference of potential of the terminals of the tube, the voltage, and the quantity of electrical current received from the transformer, the amperage, and the absorption coefficient of the tissues

radiated. The biological effect is dependent upon the amount absorbed. Tissues through which the ray pass with the great velocity of 186,000 miles per second are but slightly affected; the biological effect is manifested in those tissues which impede or stop this swift-moving electrostatic waves, that is, absorb it. The penetration under conditions incident to radium therapy and rentgen therapy bears a direct ratio to the wave length of the ray utilized.

By deep-seated malignancies is meant those located 2 to 3 cm. below the skin. The best of the shortest wave lengths is the gamma ray of radium, and although practically the same biological effect is produced upon the tissues of the body by the gamma ray of radium and mesothorium and the short wave lengths, high voltage, roentgen ray, within the limits of similar doses as measured in electrostatic units, human ingenuity has not succeeded in producing an apparatus which can be operated with safety to the patient or operator at such a high voltage as to produce the short wave gamma ray of radium. Theoretically it is possible. It is estimated that to do this at the present stage of development it would require a tube which would operate at 1,000,000 volts. This may be done in the future, but at present it is mechanically impossible. The highest voltage at present possible to use with safety is 200,000 to 220,000. Dr. Coolidge is developing a tube to operate at 300,000, which, however, is still in the experimental stage. Some remarkable results with this tube have appeared in the secular press, but it is not on the market and is not yet beyond the laboratory stage.

By radium therapy is meant the application of radium element, in needle, tube or plaque, with screening, distance and time appropriate to each case.

The factor in deep roentgen therapy which is of greatest importance is the determination of the appropriate dosage. With the mechanically perfect apparatus available it is simply a matter of technical detail to operate a Coolidge tube, with certain automatic attachments, which will register any desired voltage and milliamperage within the limits of its capacity; to place the required metal plates in the proper place for filtration, and to shoot this into the pathological area for a certain time, these are details worked out in the laboratory by highly skilled physicists and electrical engineers for the therapist; but the determination of the quantity, the quality and other elements of dosage which will produce the optimum effect upon diseased or malignant tissues can be made only by the roentgenologist and the radium therapist, combining his experience with others engaged in the same work. It is clearly manifest, from the great abundance of evidence already obtained from the composite experience of painstaking, conscientious and practical radio therapists and roentgen therapists throughout the world, that the most powerful agency in existency today with which to combat malignancies of any type is the gamma and beta ray of radium and the roentgen ray

either its shorter or long wave lengths, according to the particular location and type of malignancey to be treated. When failures occur, and they do occur, for this is no panacea, it is a reasonable assumption that they are due to individual imperfection in technique, or to the unperfected development of the science. To aid in an intelligent evaluation of its benefits, this preliminary report of 64 cases of surgically inoperable carcimona have been selected from my records and the technique used and results obtained are submitted.

The treatment of malgnancies by radiation should be considered as strictly within the field of surgery. Surgical experience, combined with technical knowledge of the laws of physics and sound judgment in applying them, contsitutes the essential factor in both radium and roentgen therapy, which assures the maximum efficiency in this new scientific field. The effort has been to develop a technique based primarily upon the biological effect upon the tissues, that which would produce the optimum effect on the pathology, rather than to administer empirically a certain ray with prescribed voltage, amperage, distance, filtration and time; that is, a certain number of milliampere minutes, or a certain number of m. g. or m. c. hours with radium. All the cases in this series were subjected to both radium and the deep penetrating roentgen ray from a Coolidge tube operating at 200 or 220 K. V. and at a distance of 50 to 60 c. m., 5 to 6 m. a., 30 to 60 minutes at each port, the number and size of ports depending upon the area desired to be radiated, so that by cross fire the desired number of units would reach the malignant area. The measurement of the dose was made by using the standard in general use by American roentgenologists: 200 K. V. 50 c. m. distance, filter 1 m.m copper 1 m.m. al, 20 c.m. port for 90 minutes, 450 m.a. minutes; this constituting 100 units by this standard of measurement.

Before undertaking any treatment it is necessary to acquire as complete knowledge as is possible of the type and extent of the neoplasm, of the patient's physical condition as shown by age, duration of the neoplasm, family and personal history, clinical history of the growths, complete blood examination, especially the R. B. C. and the hemoglobin metabolic index, urinalysis and complete physical examination, in order that the resistance to the malignancy and the ability to withstand the additional toxemia incident to the radiation may be intelligently evaluated. The iontoquantimeter in its present state is considered too highly technical, with so many sources of error, it is of value principally in research laboratories or with highly skillful technicians, although it is in pretty general use in Germany—Frieburg, Erlangen and Berlin—and by a few roentgen therapists in this country. The standard mentioned as constituting 100 units is the one in general use in America, 1. 6. electrostatic units of the iontoquantimeter representing one unit of this standard. Based upon this standard of 100 units, 450 m.a. minutes; 150 units or 675 h.a. minutes may be regarded as the

danger point, beyond which it is unsafe to go without actual destruction of tissue, or necrosis; and in deep-seated neoplasm a profound toxema, from too rapid liberation of toxins into the blood stream, would result. 150 units absorbed by the skin would produce an erythema of varying degree. More than 150 units should not be used, and this limit should be approached with caution, sarcoma will generally yield to 60 to 85 units, carcinoma to 75 to 120. Hard and dense scirrhous types are more resistant. In epithelioma 85 to 100 units or even less will produce tissue cange with fibrosis. More resistant carcinoma cells, if not destroyed, are sickened, becoming so changed in their mode of life that their preponderance over normal cells is lost, and they can be destroyed in the body, or are rendered dormant or inert by being enveloped within a dense fibrous wall, which may prevent lymphatic transference.

At Erlangen the dose of 210 electrostatic units at 23 c.m. distance and 5 m. m. copper filtration, 16 inch spark gap 170 K. V., is used, distributed over six or seven ports of entry. At Frieburg the dose is given en masse, at one sitting, if possible. 160 to 170 electrostatic units equal 100 units American standard. If the American technique, as before referred to, the time factor of the dose is divided so as to consume two or three days, experience has proven, without loss of biological effect and decidedly more comfortable to the patient. Protection of the whole body except the part rayed, by lead rubber 3-16 inch thick, and a free circulation of fresh air over the face, will do much to prevent the troublesome ray sickness, which is due both to inhalation of the ozone liberated by the machine and the toxic products resulting from the tissue changes set up and thrown into the blood stream.

The immediate effect has been invariably beneficial, both upon the neoplasm and the general condition of the patient, regardless of location, type or duration of existence. In many far advanced cases, with apparently only a few weeks of life remaining, there has been relief of pain, cessation of foul, disagreeable odors, a recession of the growths and a general feeling of buoyancy and hope; where death finally ensued there was either a profuse and exhausting hemorrhage from opening some artery, or death was gradually approached without many of the usual distressing symptoms.

In each one of the group of selected, surgically inoperable cases, radium and deep roentgen therapy were both utilized; where localized, with nodules or lymphatic involvement, radium element was applied in doses varying from 1000 to 5000 m.g. hours, with needles or tubes properly screened as occasion seemed to indicate, with subsequent deep therapy, just short of the full lethal dose, but before the reaction from the radium was completed. The primary mortality, that is, death due directly to the radium or the roentgen ray, has been nil; in three of the cases of uterine carcinoma that toxemia immediately following the use of the

radium was so great, temperature running as high as 105 degrees F., that it was not repeated.

Each case presents its own peculiar problem and should be treated with the same degree of preparation and care as in a major surgical operation. R. B. C. below 2,500,000 demands the serious consideration of a preliminary transfusion, as would also a hemoglobin index below 50. The extent and location of the area involved should be determined as accurately as possible. An explanatory incision in abdominal neoplasms is entirely justifiable if it cannot be otherwise determined, for great care is necessary to avoid putting too great stress on contiguous organs. The resulting fibrosis of the neoplasm may so interfere with vital function of these organs as to hasten dissolution, although the desired in the pathology may be brought about. If, after consideration of all these points and carefully evaluating the patient's resistance, it is determined that the dose required is greater than the patient's resistance will justify, a smaller dose should be administered, on which sound judgment would indicate would produce the greatest possible benefit without the risk of serious injury.

The group of cases selected at this time embraces only those regarded as surgically inoperable, already so far advanced that little or no benefit could be reasonably expected from surgical removal. Borderline cases or those of doubtful malignancy are not included. All of these cases have passed the one year period since the treatment by radiation was instituted. The series embraces 64 cases of inoperable carcinoma; 20 of the female breast and 44 of the uterus, cervix or body or both. Of the 20 breast cases, 16 were white 4 colored; three deaths, all colored. The 16 white cases are alive and so far as personal knowledge goes are in fairly good health. Three of the white cases and two of the colored were recurrences after operation within the year before treatment. The two colored cases are both dead and in three of the white cases a second recurrence is beginning to appear and another series of radiation has been commenced.

Of the 44 uterine cases, 9 colored, 35 white; with 7 deaths, 5 colored and 2 white. The 33 white and three colored still living are in varying degrees of health. Five of the white and the two colored cases have received a second series of treatments recently, and there has been a recession in growth but not very promising of ultimate complete recession. The others are able to attend their various duties and think they are well. They are under observation every two months, however, and of course cannot be considered cured until the five year period has passed, custom having established this as the period of complete recession before the case can be considered cured.

To summarize, the mortality from carcinoma in surgically inoperable cases one year after treatment has been:

Uterus about 16%
Breast about 15%

As to race:
The white mortality has been
Uterus ------ 5%
Breast ------ 0%

The colored mortality has been
Uterus ------55%
Breast ------75%

The great difference between the white and colored mortality is accounted for from the fact that the colored cases were those long neglected cases which are usually dumped into our hospital to get rid of them, to relieve the local doctor and at the same time ease his conscience somewhat, and let them die on some else's hands. No case was refused treatment, however hopeless it might be.

After the use of radiation therapy with radium and roentgen ray for the past two years and from the report submitted, the results seem to justify the conclusion that in malignant neoplastic growths surgical removal or radiation therapy furnishes an agency by which complete eradication is possible in the early stages and that cases of this character amenable to surgical removal are likewise amenable to radiation; that in malignant neoplastic growths a limited number, depending upon location, extent of involvement of contiguous tissues, of neoplasm and duration, are amenable to surgical removal, but that irradition with radium or roentgen ray covers a much broader field, and the penetrating gamma ray or short wave length roentgen ray can seek out and effect malignant cells hidden deep in the tissues of the affected area, which the sharpest knife and the keenest vision of the surgeon cannot find. Malignant cells are more susceptable to radiation than normal cells. In hopeless and inoperable cases radiation therapy at the present stage of its development can contribute a great deal toward the amelioration of the distressing symptoms, prolonging life and make more buoyant and hopeful the spirits of the patient, render her more comfortable and postpone the inevitable fatal result. That the comparatively new science is strictly within the domain of surgery, that each case under treatment should be regarded as a major surgical operation, and that the future promises such a developement of technique and standardization of methods that in radiation therapy there is a hopeful sign of relief for the most distressing and universally prevalent disease to which the human race is subject, cancer.

DISCUSSION

Dr. Albert Anderson, Raleigh:

I do not wish to discuss Dr. Baker's paper but merely to congratulate him upon this form of therapy, which promises so much. Some time ago we heard about this great success and

resolved to send him patients from our Hospital to be treated. We sent the worst cases we had, and I hope in the further discussion of this paper Dr. Baker will speak about the cases we sent him. We believe the profession will be ready to stand by the State Hospitals in securing the best treatment for our cancer cases, though they be on the charity list. We think this is a worthy ambition. Of course, receiving only seventy-one cents a day as our appropriation for the care of patients, which pays the entire admistration, puts our cases on the charity list, as you can readily see. It is the generosity of these men that brings this treatment within our reach, and in taking advantage of it we wish to let the Doctors know that we deeply appreciate their generosity. This treatment is going to help our cases very much. We cannot state that these recurrent cancer cases can be cured, but their last days will be made more bearable and it will be made possible for these patients to live out their last days without so much pain.

Dr. C. C. Phillips, Charlotte:

I have greatly enjoyed Dr. Baker's very excellent paper. I want to ask him to repeat the amount of filtration he is using. I am glad he emphasized the fact that in using high voltage x-rays we are dealing with a very powerful agent, and a very dangerous one if not applied with due caution.

I think in many cases the combined use of x-rays and radium is very valuable. Though radium is limited in the extent of its action, it is very valuable in cases in which it can be applied directly to a lesion; destroying the initial lesion in this way and covering the outlying regions with x-rays in an effort to arrest metastasis.

I think the treatment of cancer is one of the greatest problems facing the medical profession today. I also think that our best chance for success in handling the situation is: first educating the public in regard to early treatment; and, second, by the properly combined use of surgery and x-rays and radium and the very closest cooperation of surgeon and radiologist.

Dr. Baker, closing the discussion:

In answer to Dr. Phillip, I have not depended upon radium in every deep-seated case; only in those that could be reached with the needles, frequently inserting the needles and also tubes in the inside of the growth. Where using radium we have also used x-ray, with the idea of reaching the pelvic lymphatics. I think this coincides with Dr. Case's practice, as mentioned by Dr. Crowell. I am glad that Dr Crowell mentioned Dr. Case. My instruction in technic was given by the same roentgen therapist who instructed Dr Case, when he commenced. I use the same deep therapy machine, the Victor, and am glad to follow his experience as he frequently publishes it in the journals.

Dr. A. J. Crowell, Charlotte:

I know nothing about x-ray or radium, but these were thoroughly

discussed on our South American trip by masters. I don't believe there is a better radium and x-ray expert in the world than Dr. Case, of Battle Creek, Mich., and he believes that the use of radium is very limited. In epithelioma and carcinoma of the prostate gland or of the uterus, radium can be used very advantageously because of their accessibility. Radium must be gotten into the malignant tissue or in close contact. Where you have a deep seated malignancy, the x-ray is far preferable. Dr. Phillips believes that if we get an inch away from the growth with the radium, we will not have destruction of the malignant cells, but if we can get it into the center of the tumor, destruction of the malignant cells may be expected. Great care should be taken to protect the healthy tissue from the destructive action of the element by proper screening and packs. You must use radium with your x-ray if you are to get best results.

Dr. Case is very skeptical as to whether or not we ever cure cancer by radium and x-ray but strongly advises their use conjointly as a paliative measure. He advocates x-ray following operation for any malignancy.

REMARKS ON TYPE OF ANESTHESIA IN EXTREME SURGICAL RISKS

Benj. J. Lawrence, M.D., Raleigh

There has been, and is being said today, throughout the country a great deal for and against the various types of anesthetic. Each has its advocates and enthusiasts. One would think, with the tremendous advance of modern surgery and technique, that this more or less academic subject should have been settled, and I think it is pretty well settled in the minds of most men that ether, for routine work and in the vast majority of cases, is the anesthetic of choice. It has stood the most rigid tests that have been applied to any anesthetic. Personally, I am sure it is by far the safest and most satisfactory general anesthetic for major surgery, and therefore I use it and advocate its use in all cases, except certain extreme risks, namely:

1 Postoperative obstruction (from one cause or another).
2 Strangulated hernias in old people with possible gangrene.
3 Prostate cases.
4 Certain toxic goitres.
5 Therapeutic abortion in cases of hyperemesis gravidarum with marked acidosis.

These are some of the most important conditions that I would classify as extreme risks, and I think that the choice of anesthetic in these cases is a very important question, and that the success or failure in a given case in either of these groups depends very largely upon this choice. Of course chloroform has long since been declared unsafe and has passed out of use as a routine general anesthetic by most men. Ether, as I have said before, is used by most men in the vast majority of the cases, and I belong

to that group. But I doubt very seriously if ether ought to be used in any of the five conditions which I have mentioned as examples of extreme surgical risks. Just what ether does in a given case in any of these groups I am not in a position to say, but within the scope of a very short time, I have reached the conclusion that ether, in these cases adds very materially to the risk, and that if given, one's mortality rate will most certainly climb up. I have had this forcibly impressed upon me in the last few months, in two or three striking instances.

Some time ago there was a discussion as to the advisability and safety of enterostomy in postoperative obstruction, as compared with the other plan of going in the abdomen, seeking out the point of obstruction, releasing it, and closing the abdomen. Every one will admit that the latter procedure is preferable if the patient survives. It was argued by the advocates of enterostomy that, while it is the longer and more unsatisfactory way, one's mortality would be lower if he followed that method. And so the debate waged in the societies and journals. It is not my purpose here to discuss the merits of one method of procedure over the other, except to say that in a large number of postoperative obtruction cases one waits until his patient is in poor condition, hoping that a second operation will not be necessary, or that it is an adynamic ileus. My feeling is that if these patients be given ether, the belly opened, obstruction released and the cavity closed, a very much larger number of them will die than if one opens the belly with novacaine, places a tube in the first loop of gut he sees and comes out. Now whether the deaths that do occur after etherization in these cases are the result of an overload caused by the ether, or on the other hand, those cases that do not die after enterostomy alone survive as result of the release of toxic materials through the tube, I am sure I cannot prove, but I will say that I believe if the same patients who were given ether, with or without the enterostomy, and died, had the enterostomy alone, many of them would come through alive.

In one of the best clinics of America, where a large number of prostates are done, ether as an anesthetic has been practically discarded. I understand in that particular clinic they prefer to use gas and oxygen. Their results are good. My own feeling is that if one can not have gas or oxygen one or two doses of morphin and hyoscin, plus 1% of novocain, will be sufficient, and that it is far safer. Some prefer a sacral or spinal anesthesia. This has been impressed on me recently. A short time ago I saw three prostatectomies done in the same clinic, on the same day. The first two were men in good condition, and had been in good condition. Their condition was so good that the surgeon felt certain they could take ether and he gave it to them. The third case came to the hospital unconscious, absolutely blocked, 75 years old, and in such poor condition, on the day of the operation, the surgeon was afraid to give him any general anesthetic. He had morphin and hyoscin with novacain and is alive today. The first

two both left the hospital in boxes and both were under 60 years of age. Further, on the last eight consecutive prostatictomies done by us, three (in the best condition) were given ether, and all three are dead. Five of that eight were done under what I term local anesthesia (morphin and hyoscin plus novacain); these were the worst risks, and all five of them are alive today, or were alive a few days ago. This, to my mind, while a small series of cases, is very conclusive, and it seems to me to prove one thing-viz.) that ether in prostate work should not be used alone, and if used at all a very small quantity only should be given along with gas and oxygen. Every body in the medical and surgical world, especially those of us who do surgery exclusively, has read or observed something of Dr. Grile's work on the thyroid under local anesthesia. My experience with goitres has been more or less limited, but I have done a good many under local anesthesia with very satisfactory results. In all fairness to ether I must say that I have seen only two bad results that I feel the ether was responsible for. I realize full well that in my own hands certain cases would be very dfificult for me to manage with novacain alone. However, I believe that one can do most cases with it, and that certainly, in the extreme cases or poor risks, the mortality with novacain will be lowered.

Finally I mention toxemia of early pregnancy as the fifth example of this group. I think that most men today use twilight sleep for this. They feel in the first place, that ether is not necessary, and therefore need not be given. In the second place, with this condition there is always an acidosis and nephritis, both of which are most certainly made worse by any sort of general anesthesia, unless it be gas and oxygen.

In closing, I wish to say that I only mentioned the fourth and fifth members of this group for the purpose of completing this series, which I believe should receive careful consideration regarding the choice of anesthesia; and that I wish to place special emphasis on the importance of the choice of an anesthetic or the danger of ether in prostate cases, or postoperative obtsruction and strangulated hernias in old people.

DISCUSSION

QUESTION:

DR. JAMES, Hamlet:

I would like to ask the Doctor about the toxemia of late pregnancy.

DR. J. D. HIGHSMITH, Fayetteville:

In our experience we find that ether is very unsafe in the prostate cases, and recently we have been doing all of these cases under sacral anesthesia.

DR. LAWRENCE, closing the discussion:

I wish to say, in answer to Dr. James question, that I should

have included the toxemia of late pregnancy under my fifth classification. I did a cesarean section yesterday with local anesthesia. I think the toxemia of late pregnancy in which cesarean section is indicated should be done under local anesthesia, and that ether is contraindicated.

The writing of this paper was prompted by the belief that many good surgeons were still using ether in these cases, and while preparing it I wrote to a number of surgeons and found that my belief was correct. Several of them, however, stated that they had discarded ether in prostate work altogether, for the reason that the cases that received ether usually died. This coincided with my own feeling, and I am convinced that ether should not be used in any of these five groups if it can possibly be avoided.

TUMORS OF THE INTESTINE CAUSING INTUSSUSCEPTION—CASE REPORTS

John P. Kennedy, M.D., Charlotte

I wish to report two cases of intussusception due to intestinal tumors. The tumors are comparatively so rare as intestinal tumors as to justify their report in some detail. Following this I wish to discuss briefly intussusception produced by such tumors.

Case 1. A married woman of 40 years was admitted to Charlotte Sanatorium June 8, 1922, complaining of severe abdominal cramps and vomiting.

P. I. Has been sick three weeks, with marked soreness in right side of the abdomen, which gradually became worse and felt as though something was being pulled apart inside. Later developed cramps across the lower abdomen and then in the epigastrium, 36 hours before admission began to vomit and has kept this up.

P. H. Has had similar but less severe attacks with right side over a period of seven years. She has never passed blood nor mucus from the bowel but has been badly constipated. Her weight, 140, has remained approximately the same over a period of years.

Examination on admission showed a rather stout woman with pulse 140, temperature 101 and respiration of 20. Looks toxic and is suffering with cramps, which come on frequently. Abdomen rather fatty with considerable distention and marked rigidity of the muscles of the right side, and quite tender.

A preoperative diagnosis of appendicitis or gall-bladder disease was made with a leaning to an empyema of the gall-bladder.

Operation June 8, 1922, Drs. Pressly and Kennedy. Abdomen opened right rectus incision. Gall-bladder was normal. In looking for the appendix a mass was felt in right mid abdomen which, when pulled into view, was found to be an intussusception of the

cecum appendix and terminal ileum into the ascending colon. The bowel was easily reduced but quite inflamed, and in the wall of the cecum, two inches above the base of the appendix, was a large, rather hard mass about the size of an apple. There were no palpable glands. The tumor was thought to be malignant and accordingly the cecum was resected, using the cautery, inverting the cut ends of the ileum and colon with purse-strings sutures and doing side-to-side anastamosis by the no-clamp method.

The patient made a good recovery and in nine months' time has gained 17 pounds and has not been constipated a day since going home.

Pathological report by Dr. H. P. Barret: "Sections show a tumor composed of fatty tissue and arising, apparently, from the submucous coat of the intestine. The tumor is densely packed with polymorphonuclear cells, and the fibrous stroma is almost completely replaced by the cellular and fibrinous exudate present. The mucous membrane covering the tumor is almost completely necrotic and has lost the ability to take the stain. Diagnosis: Lipoma."

Lipomata of the intestine are comparatively rare, as is shown by the fact that only six cases were reported by King from the records of the Mayo Clinic up to 1917, out of 44,645 abdominal operations. Although so rare, their surgical significance is shown in the statement by Treves that lipomata are found in 8% of all intussusception and in the added fact that Stelten found intussusception complicating 60% of 67 lipoma cases reviewed by him in 1909.

Case 2. A man of 48 was admitted to the Charlotte Sanatorium August 9, 1922, complaining of severe upper abdominal cramps and extreme weakness from loss of blood by bowel.

P. I. April, 1922, four months before admission, was taken sick with severe upper abdominal cramps and copious hemorrhages by bowel. The bleeding was so severe that he says he was given large doses of morphia several days to control it. Has been up and down since that time but under the care of his physician.

P. H. Since 1906 has had some severe attacks of upper abdominal pain which he calls indigestion but which he describes as being very severe and cramplike in character, lasting several days at a time and leaving his abdomen very tender. Has vomited very little with these attacks.

Examination on admission: T. 99.5; P. 88, R. 20. Pallor is very marked; shows loss of weight; is worried and anxious about himself. First sound of heart is indistinct, with systolic murmur thought to be hemic in origin. Abdomen shows some general tenderness with slight resistance of upper recti. Blood on admission showed Hb. 25%; R.B.C. 2, 136,000; W.B.C. 6,500. X-ray studies showed what was thought to be a large ulcer or cancer midway the greater curvature of the stomach. This was checked up under atropin and decided to be an ulcer.

A provisional diagnosis of ulcer of the stomach was made and the patient placed on medical treatment. Was given blood transfusion the day of admission. That night got up to go to the toliet and bled from the bowel and almost fainted. During the next four weeks was given five transfusions and improved considerably, at the end of which time his blood showed Hb. 65% and R.B.C. 3,942,000. He now began to have cramps in the upper abdomen with vomiting, these attacks being quite severe and coming on 12 to 24 hours apart. In two such attacks tenderness and rigidity were both marked in the upper abdomen, and, what was very striking, numerous peristaltic waves across the upper abdomen above the umbilicus, whose direction was from right to left and not from left to right as is seen in pyloric stenosis. So severe were these attacks that patient consented to operation, which he had refused prior to this time.

Operation Drs. Pressly and Kennedy, September 11, 1922. Upper left rectus incision. Stomach was a little large, with no adhesions and no evidence of ulcer. Duodenum was pulled high up by adhesions to the gall-bladder which, with the presence of a localized area of hepatitis over the gall-bladder, was taken as an evidence of past cholecystitis. Adhesions freed between gall-bladder and duodenum. Appendix, cecum, sigmoid and rectum felt normal. The stomach was opened and inspected but no cause for bleeding could be found. Opening in the stomach was closed and abdomen closed, as we did not feel like exploring further on account of his condition, although we were very much disappointed at not having found the cause of his hemorrhages.

Following operation the patient vomited off and on but was in pretty good shape until the sixth day, when he bled profusely during the night, his pulse going up to 160, and the next morning passed a large stool of dark blood. In the next 12 days he was given 3 more transfusions, but he continued to bleed from the bowel, to have upper abdominal pain and to vomit. A mass was now at times palpable in the upper abdomen and a little to the left of the midline. At times this mass could not be felt, but when felt was very soft and not especially tender. After a few days the mass moved to the left and downward and could be felt very distinctly. Thinking it an obstruction from a tumor it was decided to explore this mass, which was done under novocain.

Second operation September 23r, 12 days after first operation. The mass was found to be an intussusception of the jejunum extending from the ligament of Treitz downward to the left side of the pelvis, involving the upper three feet of jejunum. The bowel was pulled apart with some difficulty, finding a retrograde intussusception on top a primary one. The center of the mass was a hard tumor the size of a lemon projecting into the lumen of the bowel. The involved jejunum was thickened, dilated and inflamed, but the circulation was good. There was no glandular involvment. Six inches of jujunum, including the tumor, was resected with the cautery and an end-to-end anastamosis done with a Murphy button. The tumor was attached to the bowel by a large pedicle, and was quite firm,

with an irregular surface covered with mucosa in which were numerous ulcers, a half centimeter or more across the base.

Pathological report by Dr. H. P. Barrett "Tumor composed of long spindle-shaped cells closely packed and with little intercellular substance. Some areas very vascular. Round cells and some polymorphonuclear cell infiltration throughout. A few mitotic figures are seen. In the portion of the tumor exposed in the lumen of the intestine several ulcerated areas are present with considerable exudate and some edema. The tumor apparantly arises from the muscle coat of the intestine. Diagnosis by Dr. F. B. Mallory; Leiomyosarcoma."

The patient did well for four days, then began to vomit, and it was thought that the intussusception had recurred. On September 28th, five days after his second operation, he was opened up through his last incision under gas-ether. A low grade peritonitis was present, with general distention of the bowel. A very interesting observation was that the jejunum at the site of resection was perfectly healed, and the site could be told only by a small raw area in the mesentery, although this was but five days after the resection. An enterostomy was done in the ileum and the abdomen closed.

During the following four days he was decidedly improved, then he began to vomit and to have severe abdominal cramps. Patient dragged along 15 days with obstructive symptoms persisting. The abdomen was opened again as a last resort. Several localized abscesses were found in between the loops of jejunam in the upper left abdomen and such dense adhesions as to cause obstruction in the area originally involved in the intussusception. This was shortcircuited with a Murphy button connecting the loops of jejunum above and below the obstruction. He showed no improvement following this procedure and died two days later of peritonitis with obstruction.

In children the question of tumor as a causative factor in intussusception does not enter until the age of seven or eight years has been reached, whereas in adults a very large percentage of intussusception is caused by tumors. Statistics for tumor as a cause of intussusception range all the way from 20% to 60% in adults. Only 0.5% of all tumors occur in the intestinal tract and of these only 2.4% are benign. In reviewing the literature relative to the occurance of intestinal tumors one is struck with the wide variation in percentages given, and this applies especially to the benign type. Postmortem satistics show a greater incidence of benign tumors than operative records show. For example, out of 25,000 operatons in Boston City Hospital adenoma of the intestine was found in only 1 patient, whereas it was found in 4 cases out of 4,165 autopsies. Here we have an incident of 1 in 25,000 operations and one in 1,000 autopsies. This discrepancy may be partly explained by the fact that benign tumors often give no symptoms over long periods of years, and partly, Willis thinks, by the fact that some are overlooked at operation even though they may be the cause

of intussusception, due to swelling of the bowel and sloughing of pedunculated tumors due to interference with the blood supply. Willis is firmly convinced that this condition is much more frequently caused by tumors than is generally supposed.

Tumor intussusception is more frequent in the small intestine than in the large, due to the greater freedom of movement and the absence of longitudinal bands, and this in spite of the somewhat greater incidence of tumors in the large bowel.

Tumors giving rise to intussusception are usually of the benign type, due to the fact that malignant tumors are more rapidly growing and invade the wall of the bowel, giving a brawny condition, stiffening the bowel wall, and giving rise to more inflammatory changes with adhesions, and are more often sessile than pedunculated. Out of 284 cases of tumor intussusception studied by Kasemeyer 85 were malignant and 192 benign. Of the benign tumors the pedunculated are more frequently the cause of an intussusception. The benign tumors more frequently encountered are adenomata, lipomata, myomata and fibromata.

Several theories have been advanced to explain the formation of intussusception, and its formation is more definitely understood where there is a tumor than where it occurs without any demonstrable lesion. With the type of intussusception occurring in infants and children we are not concerned in this paper, but I do want to call to your attention that the theory has recently been advanced that primary intussusception in children equivalent in its action to a tumor; both are foreign bodies in the intestine. After the obstruction becomes complete a second retrograde intussusception begins to form, as in the second case reported, where the retrograde intussusception was stopped only by the ligament of Treitz. Power states that 5% of all intussusceptions are of the retrograde type. It usually forms secondary to an obstruction or as a terminal event in peritonitis. In only one instance did I find reported in the literature a primary retrograde intussusception, and that was in the sigmoid associated with a malignant pedunculated papilloma.

The symptoms may be described as occurring in two stages: the first stage characterized by repeated attacks of severe abdominal colic accompanied by vomiting and perhaps blood and mucus in the stool; in the secnod stage the symptoms are those of intestinal obstruction—for example, toxemia, abdominal cramps and vomiting with distention. The vomiting now is continuous and soon amounts to spitting out of the side of the mouth contents of the upper abdominal tract. The history of periodic attacks of abdominal cramps and vomiting in the past is explained by recurring mild intussusception which has reduced itself. At times a mass may be felt, but the absence of a palpable mass may be confusing if the mass is under the liver edge or behind a distended loop of bowel. Constipation is a marked symptom, as in the first case reported.

The diagnosis of this condition is seldom made positively before operation and most cases come to operation only after definite obstructive symptoms appear. In patients with a history of recurrent attacks of abdominal cramps accompanied by vomiting, with little or no fever and little abdominal tenderness, with no symptoms between attacks, this condition should be kept in mind. X-ray studies will show the site of obstruction if such exists, but between attacks may be negative. The x-ray failed to aid us in the second case reported, although the patient had definite symptoms at that time.

The treatment of tumor intussusception is entirely surgical, and since most cases come to operation with definite obstructive symptoms it resolves itself into treatment of that obstruction. If the intussusception may be reduced and the circulation of the intestine is good the tumor may be excised. Most of the cases, however, require a resection of that part of the intestine containing the tumor. If the tumor is left the intussusception will recur. In cases with complete obstruction requiring resection it may be the better surgical judgment to do a two or three stage operation, merely relieving the obstruction with an enterostomy or colostomy at the first operation. In those chronic cases with considerable enlargement of the intestine in which recurrence is feared the intestine may be plicated to reduce the lumen and so prevent the recurrence.

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DISCUSSION

Dr. J. D. Highsmith, Fayetteville:

We have had one case due to intestinal polyps. This occurred in a male adult, aged about forty-five. He came into the hospital complaining of an abdominal tumor, which his family physician thought to be a appendiceal abscess. As the mass felt like a movable kidney, we did a complete urological study, which showed that it was not the kidney. Finally we decided upon an exploration, and found an ileocecal intussusception due to an intestinal polyp located at the ileocecal valve. The man had no symptoms of obstruction. Neither was he constipated, nor did he have any severe pains, which were the unusual features about this case.

HYPERTROPHIC CONGENITAL PYLORIC STENOSIS

R. L. Gibbon, M.D., F. A. C. S., Charlotte

To the student of the medical history of the gradual development of our knowledge of the etiological factors, the symptoms and diagnosis, to the evolvement of one of the most technically perfect operative procedures in an era of brilliant surgery, the subject of this paper should afford the greatest interest. Furthermore, this is modern, not ancient, history, for practically all of it has come about since the year 1897, and associated with it are the names of our comtemporaries, many of them American, who during these years have worked out the problems, some of them very intricate, connected with pyloric stenosis in infants. It being the purpose of this paper, however, to merely touch upon the practical side of the subject together with a clinical report of cases treated, those interested are referred to the abundant literature bearing on the question.

Suffice it to say here that along in the early years of the present century, as recently as 1908, the surgical treatment of these cases was followed by such an appalling mortality that several prominent surgeons denounced the operative treatment as unjustifiable, and recommended that these patients receive medical treatment only. It was just when the clouds seemed darkest, and when most conservative men had given up the then prevailing gastro-enterostomy as the only means of rescuing these wretched little subjects, that the method now in use was suggested. Its vast improvement over former procedures is attested by the increasing number of victims of pyloric stenosis who are cured permanently with the passing years.

Congenital hypertrophic stenosis of the pylorus, as the name implies, has a real organic basis in the enlarged musculature around the pylorus, which is a true hypertrophy, but which, while it narrows, very seldom entirely obstructs the outlet of the stomach. That it is prenatal, and not acquired, is admitted from the fact that the tumor mass has been found in the fetus, and that the size of the tumor found in infants of two or more weeks precludes the idea that any such hypertrophy could develop in so short a time. But accepting the above statement as a fact, however, it was necessary to answer in a satisfactory manner the almost universal observation of writers on this subject, that the symptoms of stenosis do not appear at birth but come on, with rare exceptions, when the child is at least a week old, or more. This is answered by saying that the hypertrophy is very seldom tight enough to produce symptoms by itself, but that in the course of a week or more the muscular effort made by the stomach to force its contents through the narrow opening, results in more or less irritation which shows itself in spasm of the pylorus, and that the symptoms are the effect of two agencies, viz., hypertrophic stenosis plus spasm. In support of this conclusion quite a number of cases are on record which, having

survived a gastro-enterostomy some six months or even two years, and dying of some acute illness, showed at autopsy the pyloric tumor present and unchanged. Strauss reports a case (Surgical Clinics of Chicago) of pyloric stenosis in an infant, in which he advised medical treatment. The symptoms disappeared and the child got well, but died of pneumonia nine months later. Autopsy showed the pyloric tumor still present. It would seem, therefore, that we were justified in concluding that in the great majority of instances spasm is one of the active agents in the production of symptoms.

In the recognition of pyloric obstruction of infants it is of interest to note the emphasis laid on certain characteristic symptoms by different men, but it is of more importance to observe that with reasonable care the rules given by those of experience will almost always enable one to make a correct diagnosis. The order of priority may vary with the individual, but practically all include the following prominent symptoms, viz., history, projectile vomiting, gastric retention, peristaltic wave, tumor, x-ray examination and loss of weight, emaciation, etc.

The history is conceded to be a most valuable aid where it can be gotten accurately, since not infrequently the symptoms appear with such abruptness that the mother can almost fix the day on which characteristic vomiting began, in a baby well for the first week or so. The characteristic peristaltic wave is of pecular significance, and once seen is not easily overlooked. Downes in reporting 175 cases (Journal American Medical Asociation, Vol. 75, No. 40) says he found it absent only once. The presence of a palpable tumor, felt as a small movable nodule at the pyloric end of the stomach, is confirmatory evidence of the greatest value, and when defined may be said to settle the question of diagnosis. Downes gives careful directions for palpating the tumor and states that he has been able to find it in nearly every case. Strauss, however, claims that the ability to palpate a small tumor is too much a matter of personal equation, and states that since he has learned to rely on the x-ray and fluoroscopic examination he pays very little attention to the presence of a tumor. By means of the fluoroscope he claims not only to be able to arrive at an accurate diagnosis,but can differentiate between the cases requiring prompt surgical treatment and those suitable for medical treatment. His rule is that where 80% of the bismuth has passed the pylorus at the end of four hours, the case is one not requiring operative interference. Out of the 156 cases that form the basis of his report, all were fluoroscoped and 103 were classified as surgical and were operated upon with the astonishingly low mortality rate of less than 3%. Of the remaining 55 cases classified as medical none have required surgical treatment to date. Downes gives the mortality rate as 8% in cases operated upon within the first four weeks from the beginning of symptoms. He is not very favorable to the fluoroscopic method and calls attention to the obvious difficulties. In deciding when to adopt active measures he is influenced largely by the

weight, a progressive loss of weight during a week or ten days of medical treatment being a call for surgical measures. In the small number of cases forming this report, 12 in number, we have been able to demonstrate a tumor in all but one. We have not tried the fluoroscopic method as described by Strauss. In nearly all respects the symptmatology, histories, etc., of these cases will be seen to conform closely to those given in the larger series of reports.

OPERATIVE TECHNIQUE

The surgical management of congenital pyloric stenosis up to about the year 1910 or 1912 consisted in the performance of a gastro-enterostomy, an operation followed by such a high death-rate in these debilitated little subjects as to be prohibitive, in the opinion of some surgeons. The suggestion of doing a longitudinal section of the muscular fibres of the pyloris down to the mucuosa has been generally credited to Rammstedt of Munster, but investigation in the last year or so indicates that the idea was originally brought forward by Fredet, a French surgeon, who, after cutting the serous and muscular coats, converted the longitudinal incision into a transverse one by suturing. Some years later Rammstedt called attention to this method and advised omitting the suturing, leaving the wound gaping. Downes very properly suggests that the operation as now practiced should be known as the Fredet-Rammstedt operation, since it is a combination of the ideas of both men.

The simplicity of the operation, and its remarkable effectiveness in affording a permanent cure, should not blind the operator to the inherent dangers of any operative procedure whatever, in subjects so young and frail as come to us for this trouble; nor should he neglect certain little refinements of technic, which may turn the balance in scales so evenly set between success and failure. For instance, in order to insure relief it is necessary to completely divide the muscular structures. This is comparatively easy on the stomach side, but unless great caution is used the mucous membrane may be perforated on the duodenal side, where the wall is very thin. If this is recognized at the time the damage may be repaired by suture, but if overlooked may result fatally to the patient. Most operators minimize this danger by cutting only half through the tumor and separating the balance of the fibres by spreading with a pair of forceps or the handle of a knife. The bulging mucous coat is easily recognized. Another possibility is hemorrhage. As a rule the tumor, which is usually the size of a hazel or small hickory nut, is not vascular and it is practicable to select an almost bloodless area in which to incise the mass. Nevertheless a small vessel is apt to be injured at either extremity of the wound, requiring a suture and possibly the application of muscular or omental tissue. Downes reports several deaths attributable to hemorrhage, and the same precautions for its avoidance are applicable to the abdominal wound, as the loss of even a small quantity of blood may cut down the chances of recovery. Trouble with hemorrhage is more common in older children than in the very young.

The writer has had no trouble with hemorrage up to the present time, except that on several occasions it has been necessary to use a suture for its control, but he has been greatly chagrined on at least two occasions by perforating the mucous coat of the duodenum. This was before he had learned the proper method of separating the deeper fibres. Fortunately the accident was immediately recognized and these particular patients made a good recovery. Downes in 1920 reports three cases of a similar character, two of which recovered.

Strauss, whose report of 101 cases with three deaths I have had occasion to quote before, has modified the operation somewhat in that after separating the muscularis he grasps each side of the incision and stretches the wound open, thus shelling out the mucosa. He then utilizes a portion of the tumor mass as a flap and stitches it to the opposite side. The entire wound is then covered with omentum. He claims for this method that the muscle is more widely separated and the mucous coat is permitted to unfold itself and offers a freer exit to the stomach contents. The result, in his opinion, is that patients so treated do not vomit afterwards to the extent seen after the more orthodox operation, and that the pyloris is restored to a more or less normal condition. Whether his remarkable results are to be attributed altogether to this technic may be open to question, as in the hands of the average operator the time consumed would necessarily be longer than required by the Fredet-Rammstedt method, and more complicated. It would seem that one of the most important features of both operations is the thorough separation of the muscularis, thus assuring a perfectly free exit.

The anesthetic employed in these cases is a matter of great interest, and has been much discussed. While there are those who insist that only a local anesthetic is admissible, the men who have had the widest experience are favorable to some general anesthetic, either ether, or ethyl-chloride. Under local there may be a good deal of straining by which the intestines are forced out, and the operation otherwise interfered with, especially in closing the wound. All this prolongs and renders difficult a procedure that depends largely for its success upon speed and accuracy. I have not tried the operation under novocain, although theoretically it sounds good. Doubtless in some cases it would work perfectly.

DISCUSSION

Dr. Benj. J. Lawrence, Raleigh:

I feel wholly inadequate to discuss this paper as I know it should be discussed, but I think it is too valuable to the Section and covers too great a field to pass it hurriedly. I would be very glad to have some member whose experience in this field is greater than mine to speak on the subject, in order to draw Dr. Gibbon out in the discussion.

On behalf of the Section, and for myself, I wish to thank the essayist for this interesting and highly instructive paper.

Dr. Gibbon, closing the discussion:

I am very much obliged to Dr. Lawrence for his kind remarks, but I don't know what more I can say on the subject. It seems that these cases, from the experience of men in the State with whom I have talked, are not recognized as promptly as they should be. I am sorry that our President, Dr. Long, has gone out, for I think he told me that he had never seen a case, in spite of his extended experience. I can hardly understand that. You will find that a good pediatrician will always help you out in your diagnosis. These patients are emaciated. We must also bear in mind the classification of mild and severe cases. You see many mild cases. One of those reported was of that type, I am satisfied now. He is getting well and has had great relief, but possibly he might have recovered anyway.

Dr. J. T. Burrus, High Point:

I arise to remark irregularly. I feel that this Section should explain itself in not discussing Dr. Gibbon's paper. That is a most valuable paper and it brings out an important point. After ten or fifteen years in surgery I have only operated two of these cases, both of which died. I believe that the men in North Carolina are seeing but a few of these cases, and it is because of this, probably, that your paper has not been discussed at this time, and I want to say to you that I am much pleased to have heard it. The point is this: we remember that in Charlotte you have one or two excellent pediatricians, and I dare say that the majority of your cases have come from diagnosis by these men, but I believe that a number of children are dying every year in North Carolina for a lack of proper diagnosis. I don't think we have a specialty that calls for men louder and louder than good baby doctors.

CALCAREOUS CHANGES IN THE PROSTATE GLAND ILLUSTRATED BY REPORT OF CASE

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Probably no part of the seminal tract occupies such a conspicious place in current medical literature as does the prostate. Much we know about it today that we did not a few years ago, due to the rapid development of urology as a speciality; much more we do not know, and in many respects the prostate still remains an enigma. Probably the commonest type of neurasthenia in the male has a sexual basis and in such cases the prostate always has to be reckoned with. If we regard the prostate as the barometer of the sexual apparatus, we cannot be too careful to avoid errors in diagnosis of prostatic conditions. By careful routine examination of the prostate and allied structures, including roentgen ray studies, a cause for neurasthenia in the male can often be found. Among

the many morbid processes of this gland, calcareous changes and prostatic calculi are least written about and probably least understood.

Are true calcareous deposits and changes of the prostate gland rare in comparison to other maladies of this structure, or have problems more difficult of solution overshadowed them? If calcareous changes in the prostate are so rare as to only arouse your curosity then this discussion is of doubtful value, but, on the other hand, if the common infections and secretory disorders of the prostate are likely to be a forerunner and often a direct cause of stone formation then it behooves all of us to be on our guard.

CLASSIFICATION

Prostate calculi should be classified as primary and secondary or true and false. I would supplement this by adding calcareous degeneration of the prostate gland. Primary or true prostatic calculi are situated within the glandular substances itself (i. e., within the prostatic capsule). Secondary or false calculi are of other origin than the parenchyma of the prostate—generally they are renal, vesical or urethral in origin, becoming lodged in the prostatic urethra, and are impacted urethral stone rather than true prostatic calculi. Calcareous degeneration is a result of chronic suppuration where incrustation and deposits of the lime salts around small particles of pus have supplanted the parenchyma of the gland. The radiograph shows a shadow the outline of which forms a true mould of the prostate gland.

In the literature we find much confusion as to classification and many authors do not attempt to distinguish between the true and the false calculi. The final differential diagnosis between primary and secondary stones in the prostate must be made by a laboratory examination of the nucleus of each.

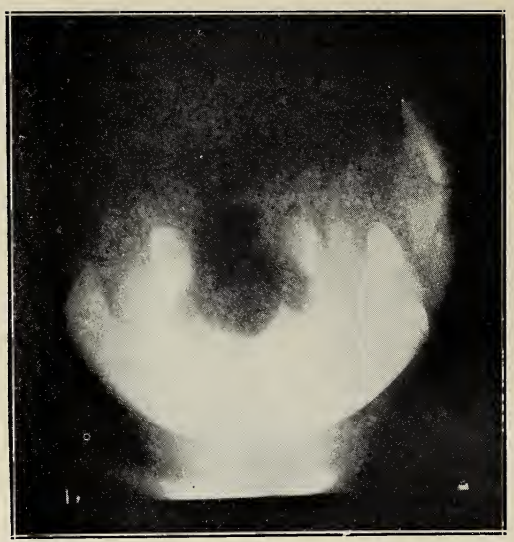
OCCURRENCE

Many writers on this subject state that prostatic calculi are rare. Thus Legueu, in 1895, wrote that there were no calculi in the prostate, but only in the prostatic urethra. Marion in 1906 said the existence of prostatic calculi is doubtful and of no clinical importance. Kretschmer's report in January, 1918, brought to light 165 cases reported of true prostatic calculi and with his series of 8 brings the total to 173 cases reported up to that time. There is no doubt in the writer's mind that there are many cases with calcareous changes and deposits in the prostate gland whose symptoms are unrelieved because the possibility of such a condition is not considered or is overlooked.

FORMATION

The definite cause of true prostatic calculi is not known, but it is reasonable to believe that any infectious process which invades the prostatic urethra and prostatic ducts is a predisposing cause.

Fig. I—True Prostatic Calculi associated with multiple urethral strictures. Patient's age 54.



Fib. II—Rontgenogram of impacted, giant, false prostatic calculi.

In chronic inflammations, the prostatic ducts secrete abnormally, drainage is interfered with and certain lime salts are deposited around the normal prostatic constituents. According to Thompson, the corpora amylacea, having attained the size of their enclosing follicles, act as foreign bodies, which sufficiently irritate the mucous membrane to throw out a deposit of calcium phosphate and carbonate, ultimately resulting in calculi. False prostatic calculi are urinary stones which have become lodged in the prostatic urethra and which rapidly increase in size from the constant deposit of urinary salts. Chronic suppurative inflammations of the prostate *may rarely* end in calcification of small foci of pus and sometimes in thickening with incrustation of the whole prostate and capsule.

SYMPTOMATOLOGY

It is quite evident from an understanding of the pathology that no group of symptoms will properly characterize this condition, we cannot make a diagnosis from a clinical history alone. For convenience we may divide these cases into two groups. First, those not producing symptoms and where the calculi are found accidentally by routine examination. In this group the patient comes to us seeking relief for some other condition. Examples are cases with the clinical picture of benign or malignant hypertrophy which are associated with prostatic stone. In the second group we have the patient giving symptoms due to the presence of the calculi. Prostatic stone is rarely considered as a possibility and consequently the diagnosis is rarely made. The three most important symptoms are (1) pain; (2) symptoms of abscess formation; (3) urinary symptoms, as frequency, burning, dysuria, etc. The remote symptoms are rectal and sexual in origin.

The asociated pathological condition as analyzed in Kretschmer's report of 173 cases are very interesting. 17 cases showed urethral stricture. In 15 cases there was an associated benign hypertrophy and in 1 case there was malignancy of the prostate. 10 of the reported series had stones in the bladder—one had renal stone and one ureteral stone.

DIAGNOSIS

The roentgen ray is the one agent upon which we depend to establish a diagnosis of calcerous changes in the prostate and can be depended on in every case. X-ray examinations are often not made in prostatic conditions, as is revealed by a review of the case reports, and I cannot emphasize too strongly the importance of the roentgen ray findings in all prostatic conditions. Rectal examination with and without an instrument in the urethra is a valuable aid in diagnosis, and if such an examination reveals uniform hardness or nodulation with increased thickness between the instrument in the urethra and the examining finger, we must suspect malignancy or stone. Crepitation, if elicited, is diagnostic in itself, but the absence of all of these rectal findings does not mean that stone can

be excluded, because deep-seated calculi produce no rectal findings and we must depend on the x-ray for a final diagnosis.

In cases of true prostatic calculi where the stones are small and are not producing symptoms, no treatment should be advised. Careful observation and repeated x-ray examinations should be made as a control of increase in size of stones. In cases of benign hypertrophy associated with prostatic calculi, and in cases of true prostatic calculi producing symptoms, removal or perineal section is the operation of choice.

CONCLUSIONS

1. That careful x-ray studies should be made of all patients with prostatic symptoms.

2. The roentgen ray is the most valuable aid in establishing a diagnosis in calcareous changes in the prostate gland.

3. In chronic suppurative conditions of long standing and in secretory disturbances of the prostate that do not respond to the usual methods of treatment, stone formation is always a possibility.

4. The absence of symptoms in many cases makes a diagnosis very difficult and the condition is frequently overlooked, as is shown by autopsy.

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File No. 2323. G. E. W. Age 65. Married. Banker. Case No. 1.

Chief Complaint—Nocturnal frequency of urination, hesitancy and difficulty in starting stream, with diminished size and force of stream.

Past History—Has had ordinary diseases of childhood. No severe illness, accident or operation.

Present Illness—In October, 1919, patient began to have frequency of urination at night with a sensation of inability to empty bladder. On December 9, 1919, rectal examination showed general enlargement of prostate gland, with small hard nodules throughout, with a tendency to be fixed, on the left side high up is an indurated nodular area which extends up into the left seminal vesicle. Soft rubber catheter was introduced and about 2 ounces of residual urine found. Observation cystoscopy showed bladder practically normal, both lateral lobes of prostate showed moderate degree of hypertrophy.

Laboratory Findings—Urinalysis negative. Prostatic secretion; numerous pus cells; inactive spermatozoa; no organisms.

X-ray shows shadows on each side of urethra and in region of prostate. Silver iodide cast of bladder shows shadows below bladder and definitely separated from it, lying on either side of urethra, apparently prostatic calculi.

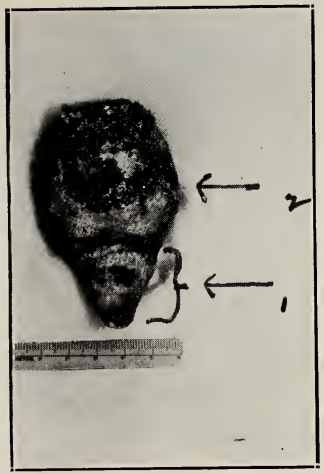

Fig. III—Giant, false, prostatic calculus removed by perineal section—Dr. A. J. Crowell operating.

1—Portion within the grasp of the vesicle sphincter.

2—Portion in prostatic urethra.

Fig. IV—Lateral view of giant calculus.

Fig. V—Calcareous degeneration of the prostate gland—Case of Dr. O. L. Miller's.

1—Old sinus leading from left hip, the walls of which have undergone calcareous changes.

2—Showing a perfect "mould" of the prostatic capsule.

Diagnosis—Carcinoma of the prostate associated with true prostatic calculi.

Comment—Clinical picture of prostatic hypertrophy, which was the cause of symptoms. Prostatic calculi not producing symptoms and discovered by routine x-ray examination, which should be done in all cases giving symptoms referable to to prostate. Example of true prostatic calculi.

File No. 4465. C. E. W. Age 54. Married. Farmer. Case No. 2.

Chief Complaint—Incontinence of urine.

Past History—Ordinary diseases of childhood—no complications. No operations. Denied venereal infection. In 1909 had attack of kidney colic. In 1910 was injured by a horse falling, the shoe being forced against the posterior urethra and perineum.

Present Illness—Following injury patient had pain in perineum and dysuria. Had been unable to sit on perineum for six year and has had incontinence for past four years. X-ray shows large stone in prostatic urethra extending into vesicle neck. Cystogram shows sodium bromide filling around shadow in the urethra.

Diagnosis—False or secondary prostatic calculi.

Comment—Example of urethral stone impacted in the prostatic urethra and condition aggravated by injury. It is possible that this stone is of renal or ureteral origin, or it is possible that the perineal injury is the direct cause.

File No. 8241. F. A. D. Age 59. Married. Unable to work. Case No. 3.

Chief Complaint—Dribbling and inability to retain urine for any length of time.

Family History—Father had asthma and died of pulmonary tuberculosis.

Past History—Measles and enteric fever. At age of seven had fall from swing, injuring right tibia. Swelling and pain followed; in four days swelling incised and necrosis followed; drainage continued for 18 months, when tibia healed. A similar trouble began in left hip. At age of 12 he had a purulent urethral discharge with hematuria, which was diagnosed as gonorrhea. He was later thought to have a stone in the bladder and perineal section was made. A sequestra of bone was removed from the prostatic region and patient afterwards passed two small pieces of bone through perineal wound.

Present Condition—December 4, 1922, his subjective urinary symptoms are of secondary importance and the patient now seeks relief for his hip condition. He was referred to us for our opinion as to his prostatic condition and refused even a thorough examination.

Rectal Examination—Showed a small prostate fixed and of stone-like consistency. Metal catheter gives grating sensation.

X-ray shows shadow which is exact mould of prostate with calcarous tract running towards left hip.

Diagnosis—Calcerous degeneration of prostate gland.

Comment—A chronic suppurative process of prostate as a result of bone infection. Glandular substance replaced by incrustation of lime salts.

DISCUSSION

Dr. J. D. Highsmith, Fayetteville:

I am sure that we should not let this very excellent paper pass without saying something about it. I certainly appreciate Dr. McKay's bringing this subject before the Society. Personally, I haven't had any experience in this type of cases at all, and I think it is an excellent plan to x-ray these cases presenting prostatis symptoms. It is something we have not been doing, but I think that hereafter we shall make a practice of x-raying these cases.

PURGATION WITHOUT DEFINITE INDICATION IN DOUBTFUL INTRA-ABDOMINAL CONDITIONS*

D. T. Tayloe, Jr., M.D., Washington

I have selected this subject because during my brief experience I have seen more disastrous and fatal results due directly or indirectly to indiscreet purgation than any other avoidable condition I can mention.

The stomach is the mouthpiece of the entire gastro-intestinal tract, the watchman of the abdomen, and here every alarm arising from within the abdomen is first registered; hence the vast majority of acute intra-abdominal conditions are ushered in by epigastric pain, nausea, vomiting, constipation or diarrhea. These early symptoms may within a few hours develop into any one of a hundred or more different diseases. It is during the prodromal stage that most diseases present such vague symptoms and indefinite physical findings as to make immediate and accurate diagnosis extremely difficult or impossible. It is also during the prodromal stage that elimination is of such great value in aborting the disease, and, as a purgation is the easiest, simplest and most efficient mode of elimination, calomel, magnesium sulphate, castor oil, etc., here find their chief indication. Far be it from me to condemn purgation. Purgatives properly and carefully used are among our most valuable and dependable drugs and in many instances nothing else will suffice, but purgatives improperly and imprudently administered are extremely dangerous and at times disastrous. At least seventy-five per cent of the cases of acute diffuse peritonitis give a history of having received a purge, aperient or laxative, quite often taken by the patients themselves but too frequently administered or ordered by the attending physician.

There is no doubt that acute appendicitis and its complications is frequently a fatal disease. We fully appreciate that the mortality of acute diffuse peritonitis secondary to perforated appendicitis is indeed high, and this mortality is laid at the door of surgery. At least fifty or even seventy-five per cent of such cases have had the way paved by magnesium sulphate or some other purgative. In

*Read by title.

other words, purgation is frequently directly or at least indirectly responsible for the patient's death, which is as much as to say the most frequent cause of peritonitis is improper purgation, quite often ably assisted by neglect. It is during the early stages of these acute intra-abdominal diseases that the indications suggesting purgation arise, just at the time when, if the case is kept under observation for a few hours longer, it will diagnose itself. At this stage if we would stop, look and listen for a while before employing the use of purgatives the number of fatal cases of acute diffuse peritonitis could be greatly reduced. If diagnosed and operated at an early stage the mortality of acute appendicitis is practically nil and the patient can be assured a rapid and uneventful recovery. But if, instead of carefully studying the case and awaiting the time and natural development of the process, a purgative is given, it only throws the process into high gear and the disease so rapidly progresses that a fatal termination is thrust upon us before the true nature of the underlying pathology has an opportunity to manifest itself.

When a purgative is given in these acute intra-abdominal conditions one of three things happens. By the grace of God the purgative is effectual, or nature comes to the rescue and the purgative is vomited, or, which is usually the case, the patient defecates into his own peritioneal cavity through a perforated appendix, giving rise to acute generalized peritonitis. By the time these cases reach the surgeon the majority of them are inoperable—as Deaver says, "Too late for early operation and too early for late operation." Those that are operable are well advanced suppurative or absessed appendices, thus making operation more difficult and dangerous and demanding draining. This is frequently associated with prolonged and stormy convalescence, which is quite often interrupted by disastrous and fatal complications.

Not only is purgation dangerous and often disastrous in acute appendicitis, but also in cholecystitis, acute gastric and duodenal ulcers, traumatism to a viscus with late necrosis, obstruction due to neoplasm, etc. All of these cases are usually ushered in by epigastric pain, nausea and vomiting. In the beginning it is quite often impossible to make an accurate diagnosis and it is these cases that are so often purged in their infancy, only to return a few hours later and find to our chagrin the once doubtful condition a well advanced case of acute diffuse peritonitis.

Let us pass, if you please, from purgation in early intra-abdominal diseases to so-called late purgation, with the appendix chiefly in mind. The appendix, as we all know, is a very deceptive and treacherous organ and is frequently found at fault when it is least expected. Occasionally there is no tendency to localization of pain and tenderness in appendicitis, especially so in elongated appendices pointing deep into the pelvis, up toward the liver or kidney, or adhered to adjacent organs, distorting the anatomy and producing a typical symptom itself. Quite often grand old nature comes to the rescue and tends to arrest the disease by permitting the

appendix to empty back into the cecum or by walling off the process by adhesions. Purgatives administered in such cases will either produce an acute exacerabation of the disease or, if the pathology is further advanced than expected, will produce a perforated appendix and dissemination of infectious material throughout the abdominal cavity.

It is the surgeon who so frequently witnesses these cases of generalized peritonitis and it is he who realizes and appreciates the real problem they present. I am sure we all agree that it is a disease much easier to prevent than to treat. This is the day of preventive medicine and surgery. The State Board of Health has men and women in all parts of the country trying to teach the people how to avoid disease and the necessity of seeking medical aid in the infancy of all illness. If just a little of this effort were lent in teaching the laity the dangers of indiscreet purgation it would be a big step forward in reducing the number of these unpleasant and frequently fatal cases of acute generalized peritonitis.

SURGERY OF THE THYROID GLAND

J. T. Burrus, M.D., High Point

The natural tendency of a goitre is to increase in size, and because of this it is to be seriously considered. By pressure on the trachea, blood vessels or nerves, it may interfere materially with the act of respiration or heart action, producing a thyrotoxicosis. It may undergo tissue changes, resulting in tumor formation, which tumor may degenerate and ultimately become malignant, or may begin as a malignant tumor. For the above stated reasons treatment is important.

It is the opinion of the writer that all cases in which the thyroid gland is noticeably enlarged and produces the slightest constitutional symptoms should be treated surgically, and if so, before the more advanced symptoms develop. The mortality in such cases is almost negative and the results generally excellent.

Warbasse says: "Operations are indicated:

(1) When goitre causes pressure symptoms.

(2) In nodular goitre.

(3) In rapid growing goitre.

(4) In painful goitre.

(5) In goitre growing down into the thorax, when delay would call for a more serious operation later.

(6) In goitre that produces thyrotroxicosis.

(7) In colloid goitre.

(8) In cases where the thyroid gland tends to enlarge despite other treatment.

(9) In cases that cause the patient distress because of its unsightliness."

It would appear from the author's classification, judging by his statement as made above, that practically all goitres are surgical and should be considered and treated as such. The same author gives, however, his indications for treatment, which are:

(1) "Extreme impairment of general health.

(2) In cases where great damage has been done the heart.

(3) Where goitres are very small and receding.

(4) Absence of all the indications, as above stated, for operation."

With all the knowledge given to us by Holsted, Mayo, Crile, Warbasse, Crotti and many others, surgery of the thyroid gland, if done early, affords as beautiful results, with a most glowing and satisfactory end result, as surgery of any part of the body. The technic has improved wonderfully and we no longer grope our way in darkness, but with the light given us by these men we know what to do, when to do and what to expect, each surgeon putting into the work his own individuality, which shows some divergence in detail. Fundamentally, however, there is very little difference.

Certain principles must be aimed at if one wishes to obtain good operative results.

A few years ago to remove the gland sufficed in most cases, but not so today. We must preserve the patient, guarding against the removal of too much of the gland, or too little, making sure that symptoms of recurrence do not appear. The critical public must be satisfied and the esthetic taste of patient and friends necessarily considered. To do thyroid surgery it is necessary to have with us, at all times, a knowledge of important anatomical facts. These facts I quote from Crotti:

(1). "Knowledge of the anatomy of the parts.

(2). To leave parathyroids and the inferior laryngeal nerve uninjured.

(3). To leave enought thyroid tissue to protect the patient against future hypothroidism.

(4) To remove enough of the gland to protect the patient against further hyperthroidism.

(5). To obtain as nearly an invisible scar as possible.

(6). To shape the neck so as to render it pleasing to the esthetic sense."

Operative treatment consists of:

(1). Excision.

(2). Resection.

(3). Enucleation of the thyroid gland.

(4). Ligation of the superior and inferior poles, one or both.

The man who does thyroid surgery must have a knowledge of different methods in order to meet any emergency that may arise, applying the surgical technic in the case necessary for the case that

confronts him. "Shall I excise, resect or ligate?" is the question one asks himself when each case is presented, "Or shall I use a combination?"

Koker used the term "excision" in speaking of the complete removal of the posterior portion of the gland, which he enters into the discussion of in very great detail.

When bilateral or unilateral, or both, are used, the term "resection" is applied. This applies to cases in which a portion of the thyroid gland was left, making sure not to invade the territory in close apposition to the parathyroids and the inferior laryngeal nerves.

It is my observation that most men in this country are doing an intra-capsular excision in removing the thyroid gland, which method has been looked upon as safe, with few instances in which the laryngeal nerve or the parathryoid have been injured.

Bilateral resection is the method of choice when it can be done. By this, the entire gland may be exposed. The parathyroid and the inferior laryngeal nerve, therefore, are not nearly so likely to receive injury, and, from the esthetic point, the neck can be left in a much better condition.

With every case one asks himself, "How much thyroid tissue can safely be removed?" Those who are familiar with this subject and have had the largest experience have a broad difference. Some remove all save a few grams, by weight, and others say that one-half the thyroid gland should be left. It appears to me that every surgeon has his idea which has developed as a result of his experience as to just how much of the gland should be left. It has been the writer's plan to remove all but a very small part of the posterior portion of each gland, leaving a portion no larger than the size of an English walnut on either side.

When unilateral thyroidectomy has been done, which has been in a few cases, the entire gland has been removed. I have never seen symptoms of hypothyrodism develop, and this statement is made after handling more than one hundred cases.

If a small amount of the gland is left, a compensatory hypertrophy takes place, sufficient to prevent myxedema. It is obvious, however, that no theoretrical rule can be applied to every case.

Ligation of the superior and inferior poles of the thyroid gland has only been done, so far as I know, as a preliminary operation for later thyroidectomy, and is resorted to in those cases that have advanced so far that a thyroidectomy can not be safely undertaken. This, of course, is done to diminish the blood supply to the gland, check its secretive power and cause atrophy of the gland and a thickening of its capsule. The ligation of the superior pole is the method of choice. In most cases which have been handled by me it has been done only for the amelioration of the patient's symptoms, and with a view to a later thyroidectomy.

In advanced cases it is better to ligate one pole and then, after the reactionary symptoms have subsided, to ligate the opposite side. It is distressing that these patients can not be seen earlier, in which cases ligation would not be necessary; thyroidectomy being far more preferable.

As an aid basal metabolism is of importance, and when carefully estimated will be of great value.

In conclusion, it is not the purpose to describe the operative technic, as we are all in possession of textbooks which elaborately and clearly enter into this subject.

SURGERY IN SOUTH AMERICA

A. J. Crowell, M.D., Charlotte

The time allotted me is inadequate to give you more than a general idea of surgery, as we saw it, in South America, to say nothing of her wonderful medical colleges, hospitals, and universities.

The cruise was made under the auspices of the College of Surgeons and was conceived, planned and executed by Dr. Franklin H. Martin, Secretary-General of the College. Dr. John George McDougall, of Halifax, Nova Scotia, acted as presiding officer and assisted Dr. Martin greatly in executing his plans. Dr. C. B. Schoeffer, of Allentown, Pa., was chairman of our Scientific Committee and presided over our daily scientific discussions while sailing.

We visited Cuba, the Canal Zone, Venezuela, Trinidad, Brazil, Argentina, Uruguay and Barbados. Our reception was very cordial indeed by both the surgeons and the government officials. Special receptions were given us by the president of each country visited and by the governors where stops were made other than at the national capitals. Our own embassies and consuls at each place visited were extremely courteous and rendered every assistance possible to make our visit both profitable and pleasant.

Our stops were entirely too short to see much of the surgeons and their work or to visit the hospitals and universities except at Rio de Janerio, Buenos Aires and Montevideo. At these places, however, we visited the most important surgical clinics, became acquainted with many of the leading surgeons, and saw them in action in their own workshops. The hospitals are imposing, and the main ones are under the control of the medical schools. I believe that in their hospitals and operating rooms, with their surroundings and help, they are the equal of any representative group in any country in the world. Their instruments and operative procedures are very much like those of the French. As in France and Italy until recently, the trained nurse is seldom seen. The surgeon selects his own instruments and directs their sterilization. He

arranges his own instrument table, as well as the sterile sheets and towels over the patient. This work is done quickly as his assistant prepares the patient for operation. They thread their own needles and handle their own instruments. As a rule, they are clear in thought, sound in judgment, decisive in opinion, and quick in action. They are fine anatomists and never appear to be lost in the presence of any pathological condition. They are accurate in diagnosis, taking great care to work out every detail in a clinical way. Their hospital records are excellent, probably better than those found in the United States on an average. They have taken an advanced step in standardizing surgery in that any one who wishes to become a surgeon must take a surgical apprenticeship for several years before he is given a surgical service. This is patterned somewhat after the plan in vogue in Great Britain, France, Italy, and Germany. They have surpassed us somewhat in this respect, but the College of Surgeons has recognized the advisibility of some such training and is now endeavoring to standardize surgery in this country.

Their methods of diagnosing and operating upon hydatid cysts of the lung and liver are next to marvelous. The two-step method is employed, as a rule, in cysts of the lung, and the single operation is employed in cysts of the liver. The first step in the lung operation consists in removing a piece of one or two of the ribs and packing the wound in gauze. This is done to bring about adhesions between the sac and pleura. In from six to ten days thereafter the adhesions are sufficient to make the second step of the operation safe. In this, the second stage of the operation, the fluid is withdrawn by thrusting a large trocar into the cavity of the cyst, after which the sac is sutured to the pleura to make sure that the lung is protected from the escape of fluid into the lung (from the cysts). The membrane is then caught with ring forceps and by gentle traction it is removed. The wound is then drained by means of soft tubing. Gauze is packed around the tubing at first and the wound is encouraged to heal rapidly. In cysts of the liver, the sac is exposed and the fluid withdrawn through a larger trocar. The membrane is then evacuated through the trocar by means of an electric pump. The sac is sutured to the abdominal wall and drained. Some use the tube and others use gauze which has been soaked in a 50% solution of alcohol.

Their abdominal work is not very different form that done by our own surgeons. They probably do more vaginal hysterectomies than we do and they do them very quickly and expertly. I saw one of these done in a very few minutes. The surgeon had only one assistant, no nurse, and seemed to have all the help he needed. Every move seemed to give results. By far the quickest breast amputation I have ever seen was done the same morning by another surgeon, who is also the anatomist of the University, and the work was done with the same kind of help. They use but few instruments but what are used are of the best makes.

You probably wonder why I have said nothing thus far about

the urology and the urologists of South America. We always leave the best for the last. Urology is just coming into her own there. Until recently it was done by the general surgeon, but now they are establishing chairs of genito-urinary surgery in the medical colleges and hospitals.

Though the specialty is of short duration and those limiting themselves to it few, I had the pleasure at Montevideo of inspecting the greatest urological hospital in the world. It is a dream and far beyond anything I had ever expected to see. It is a twenty-bed capacity private hospital, owned and controlled by three young men. It is located out some distance from the center of the city and cost $200,000, the grounds, building and equipment. You see this is $10,000 a room. The building is modern in every detail and the equipment the best it is possible to obtain, from laundry to instrument sterilizer. Their deep x-ray machine is of the latest German type, and its installation, as well as that of the diagnostic outfit, is ideal. Their arrangements for sterilizing cystoscopes and catheters, both ureteral and urethral, in their diagnostic and treatment rooms are almost beyond the imagination. One of the owners of the institution is Dr. Nojueira, a urologist and, of course, the most important of the three. Another is a surgeon, and the third is Dr. Butler, the x-ray and radium expert. The urologist is a member of the College of Surgeons and has visited the clinics of the United States and abroad. His special training of four years, however, was obtained largely in Europe. Time did not permit us to see any of his work but his results. Any man, however, who can conceive, construct, and equip such an institution must be a past master, and I am told by his confreres that he is.

In Buenos Aires I had the pleasure of meeting Dr. Correlli, who originated the plan of injecting oxygen into the perirenal fat and ureters. This enables one to get pictures of the kidneys which are marvelous. I saw him do two of these and had I seen nothing else on the trip I would feel amply repaid for having taken it. The outfit is very expensive but I was so impressed with the work that I immediately ordered one.

They use local and spinal anesthesia a great deal and seem to be greatly pleased with it. Novocain is used almost universally and in very small doses in their spinal anesthesias. The powder is sterilized and hermetically sealed in single doses until needed. This is dissolved in the spinal fluid as it is withdrawn and immediately reinjected.

PEDIATRICS

Chairman: John R. Ashe, M.D., Charlotte

SOME DIFFICULTIES IN EARLY BREAST-FEEDING

(Chairman's Address)

The most difficult class of cases that I encounter in my practice are those arising within the first three months. During this period we have a number of perfectly definite conditions, such as pyloric stenosis, pylorospasm, birth injuries, hemorrhage of the newborn, etc., that, though often very troublesome, are by the very nature of their definiteness more satisfactory to handle than the small class of cases that I wish to consider. I am going to present these more as case reports than as a real paper, and, because of the fact that each of them caused me considerable worry, I hope to get some discussion from you, and through this some explanation or reason for these conditions.

Baby A. Four days old; girl; first baby; parents healthy; normal pregnancy; full-term baby with normal delivery. First three days, before mother's milk came in, uneventful. As soon as milk came in baby began vomiting very forcibly immediately after each nursing. Vomitus and the milk expressed from mother's breast extremely yellow—much more so than ordinary milk changing over from colostrum. Examination of baby negative for peristaltic waves; considerable prostration present. Examination of milk by Holt method showed about three per cent fat. Baby's stomach was washed out and about two ounces of a weak modified milk with barium given by lavage and x-ray picture made, which picture showed that stomach emptied readily. There was no reason, from the x-ray standpoint, to even think of a pyloric stenosis or spasm. The baby retained this artificial feeding and a few hours later was put back on breast-feedings, which, much to our surprise, she handled perfectly, and from that time on through infancy had an uneventful course.

Baby B. Girl; first baby; strong, healthy parents; normal pregnancy; except that vomiting extended considerably longer than usual; full term; normal labor. First seen when five days old, when the chief complaint was vomiting. She began vomiting as soon as the milk came in, very much like the first baby, immediately or very shortly after nursing, and the vomitus and breast milk were both extremely yellow. Bowels had been moving about as you would expect from a normal baby, at first meconium stools and later small yellow stools with a few lumps. Baby very fretful, sleeping very little. In view of my experience with the first baby reported (which was about two years before this), this baby was put on stomach washings and, in addition, atropin, although no peristaltic waves or tumor could be made out. This treatment was continued three days and the baby kept on the breast, without the slightest benefit. At this time she was given modified milk and barium mixture and pictures made, which, as in the first baby, showed that the stomach emptied normally and that there was no evidence of pyloric stenosis or spasm.

The baby had gone downhill so rapidly and had become so prostrated

that a radical change had to be made, and she was taken off the breast and put on modified milk, with the result that the vomiting immediately stopped, and for the next week, while she was on this diet, she did very well. At the end of this time the breast milk had about lost its yellow color and she was put back on the breast. She did fairly well for a while on breast milk and supplementary modified milk, but improvement was very slow until after complete failure of the mother's milk, when she did well on artificial feeding. The breast milk was examined several times during the first two weeks and, as far as percentage of fat and specific gravity would indicate, was about normal in quality, but was intensely yellow in the beginning, and this color persisted for a little more that two weeks.

Baby C. Second baby; girl; three weeks old; full term; normal labor. Chief complaint, vomiting. The first two weeks did well; gained weight. Then for a week had been vomiting (projectile in character) during nearly every nursing. Stools frequent, four to six a day, yellow, with curds. Had cried a great deal and slept very poorly, but had not lost weight. The mother had made no radical change in her diet or daily habits.

In spite of this week of vomiting and frequent stools the baby looked very well, and nothing in her appearance or examination suggested pyloric stenosis. She was taken off the breast and put on modified milk, and, like the other babies reported, immediately stopped vomiting and the bowel movements became normal. Four days later she was put back on the breast and did as well as any baby could do. Examination of breast milk here showed apparently normal milk.

I have never been able to explain these three cases satisfactorily to myself. It seems, however, that the babies themselves were perfectly normal, and that the fault must have been with the breast milk in each case. We all try our best to encourage breast-feeding, and very few babies are weaned during the first few months. I believe, however, that persistence in attempting to breast-feed the second baby in this series would have been disastrous.

If some of you can give me an explanation it will be greatly appreciated.

DISCUSSION

Dr. J. Buren Sidbury, Wilmington:

I saw a case a day or two ago very much like the case that Dr. Ashe reported. I am sorry that I am not able to give you a postoperative report. This child did well for three weeks and gained weight, exactly how much is not known, but it was thought to have gained a pound or a pound and a half. Then it began to vomit. The vomiting was projectile, and the vomitus was yellow, and was mixed with bile. Except that it cried a good deal at night, they said it did well the two weeks it was in the hospital. The third week it lost, and was brought back to the hospital on account of the vomiting, which was projectile in character. It had two or three stools a day, mixed with mucus. It had the gastric waves typical of pyloric stenosis, but no tumor could be felt. A bismuth meal was given, and the stomach was washed out. It was a ques-

tion of whether it was pyloric stenosis, but the fact that the vomitus was yellow kept us from believing that it was possible for it to be real pyloric stenosis. The baby was to be operated upon, and that is why I remarked that I wished I could tell you what was found. Our diagnosis was a band across the duodenum just below the common bile duct. That to us was a very interesting case, because from the fact that the child had bile in the stomach, we could not feel that it had pyloric stenosis.

In regard to the cases that you have seen, I do not think at all that I can help you, but I feel that any method, with newborn babies, by which you proceed to try to keep the baby on the breast is the proper method, even taking it off the breast for two or three or four days, with the expression of breast milk, and then putting it back.

I appreciate your paper very much.

Dr. I. W. Faison, Charlotte:

How far apart did you have them nursed?

Answer: Three hours.

Dr. Faison:

I have seen them relieved when put on four to five hour nursing intervals.

Dr. Ashe, closing the discussion:

The thing that impressed me with these babies was the fact that the babies seemed absolutely normal, and they seemed to be some of those rare cases in which there was something wrong with the food.

TRANSFUSION IN HEMORRHAGIC DISEASES OF THE NEWBORN

J. Buren Sidbury, M.D., Wilmington

The use of human blood as a therapeutic agent in melena, or hemorrhagic disease of the newborn, has been one of the gratifying advances in medicine during the last decade. Human blood has acted as a specific in this condition.

HISTORY

The first transfusion of blood for hemorrhagic disease of the newborn was performed in New York City by Dr. Alexis Carrel in 1908. (1) The method was direct transfusion from the left radial artery to the right popliteal vein. The baby recovered. In 1909 Dr. Crile introduced the cuff and cannula method. In 1910 the Elsberg cannula was introduced, and, during the same year, Vincent of Boston introduced the methed employing the paraffin-coated glass tubes.

In 1913 Lindemann aroused considerable interest in transfusion by itroducing the syringe method, which simplified the procedure and, at the same time, gave a method by means of which the quantity given could be accurately measured.

In 1915 Lewisohn (2) reported two cases in which transfusion was performed by the citrate method. Since then many modifications of these methods have been reported with good results in all. For the sake of

brevity, they can be divided into two general groups, namely, direct and indirect. In one treated blood is used and in the other untreated blood.

In 1908 the first case of hemorrhageic disease of the new-born was treated by subcutaneous injection of whole blood by Schloss. Between 1908 and 1911 seven such cases were treated by him with one death. (3) In 1910 Welch (4) reported twelve cases treated by transfusion. Since then a large number have been so treated with good results.

ROUTES

In infants the routes that have been used are the superficial veins of the arm, of the neck, of the scalp and the popliteal or femoral vein. In September, 1915, Helmholtz (5) was the first to bring to our attention the employment of the superior longitudinal sinus as a route for the aspiration of blood as well as for injections. In the same year, Howard (5) used the superior longitudinal sinus, injecting citrated blood. Since then this route has been used frequently on account of its accessibility in very young infants. In 1919 I used the umbilical vein in an infant 4 days old, giving 100 cc of whole blood by the syringe method, with satisfactory results.

ETIOLOGY

The etiology of this condition is not known. The following factors are thought to have some bearing:

1. Hypoplasia of the coagulating elements of the blood may be a factor. According to Schloss and Commiskey, (6) "the cause for persistent bleeding in these cases must be due to some defect in the normal mechanism of the blood-clotting time." They report ten cases which showed a coagulation time varying from normal to indefinite times, showing that the bleeding is not always dependent upon hemorrhage diathesis. Another interesting point here is that the injection of blood cures these patients immediately and they have no return of symptoms. Transfusions do not cure patients with hemophillia.

2. From 2 to 6 per cent of these cases are syphilitic, according to Holt.

3. Infection seems to act as a predisposing factor.

4. From observation, we note that babies that have been more or less asphyxiated have a tendency to bleed.

5. Trauma, such as is frequently suffered in difficult deliveries, and the common methods of resuscitation may well be exciting causes.

Rodda (7) has called our atention to the fact that as many as 50% of the necropsies in cases of stillbirth or on infants that die a few days after birth reveal hemorrhages in different parts of the body, many of which are not recognized before death.

According to Brown and Swift (8), these cases may be divided into three clinical types, namely: the umbilical, the seromucous, and the purpuric, with a mortality of 60, 50, and 22% respectively. This was before the use of serum and blood transfusion.

Rodda (7) has shown that these babies have a prolonged bleeding time as well as a delayed coagulation time. This may be increased up to 15 or 20 minutes, and, in some cases, even longer.

OCCURRENCE

At the Boston Lying-In Hospital, Townsend (9) reported that bleed-

ing in the newborn occured in 32 infants in 5,000 births. Ritter found 190 cases among 13,000 births at the Lying-In Hospital at Prague. Epstein found that it occured in 8% of the cases at the New York Foundling Hospital. From Rodda's recent article, we must conclude that these figures are based mainly on clinical diagnosis, and that the occurence is much more frequent than their figures would indicate. Rhodda (7) states that "Statistics from the Newborn Clinic, University of Minnesota, show that postmortem examinations reveal cerebral hemorrhage in more than 50% of all infants that die inter partum or during the first few days of life. These findings often were made following noninstrumental, or even easy, deliveries." It was also noted that these hemorrhages occurred in other organs than the brain.

Here I want to emphasize one very important point. If these babies bleed they bleed early. The vast majority of them bleed within the first forty-eight or seventy-two hours, and practically all of them bleed within the first week of life. Lespinasse (10) reported 15 cases treated with transfusion, and all but two patients were less than 4 days old. The umbilical vein is patent and accessible up to 4 days of life, as demonstrated by my case.

MORTALITY

Before the use of human blood, the mortality in this condition was from 35 to 87%. Up to 1914, thirty-seven cases had been reported treated with human blood, either by injection under the skin or by transfusion, or by both, with three deaths, or a mortality rate of 8%. We now believe that all of them should recover if properly treated.

TREATMENT

It was once thought that the blood of the infant and the mother were always compatible. Cherry and Langrock (12) tested 34 newborn babies against their mothers' blood. There was no agglutination nor any hemolysis in any of these tests. They started out to make 100 consecutive tests on as many babies born in the hospital, but they stopped when 34 gave no agglutination and no hemolysis.

According to the more recent work of Jones (13) on 197 specimens of blood from young infants, 78.8% could be placed in one of four groups in accordance with the classification of Moss. He showed that the different groups occurred with approximately the same frequency in the newborn infant as they do in the adult. Iso-agglutinins have been demonstrated in the blood of a 7 months' fetus.

In 1920 Minot and Weld (14) examined 160 specimens of umbilical cord blood and found that 70% could be definitely grouped.

Happ (15) established the group by both serum and cell reaction in 22.7% of the infants between one and three months of age; in 31.8% of infants from 4 to 6 months, and in 69.7% of infants from 6 months to 1 year. He states that after one year the group could be established in practically every case.

Unless time will not permit, every patient should be tested against the donor for agglutination and hemolysis before the transfusion is performed. Of course, the Wassermann reaction of the donor's blood should be known.

The injection and transfusion of whole blood will accomplish these results: (1) stop the hemorrhage; (2) replace lost blood; (3) overcome infection by giving new antibodies and new complement.

COMMENT

Obtaining blood from one of the superficial veins of the newborn infant is often a difficult task and at times impossible even in the hands of an expert. The easiest route is by way of the superior longitudinal sinus, but this route should be employed only by one experienced in its use, and even the experienced worker may fail to enter the sinus because of its abnormal position, due to distortion from molding of the head. This is especially true during the first few days of life. We must admit also that the cranial cavity cannot be punctured with impunity; calamity will sooner or later ensue.

The psychic effect on the mother was one of the reasons for selecting another route than that by way of the superior longitudinal sinus in this case. I dare say that no mother could look on with impunity and see a needle thrust into her baby's head. To avoid this psychic effect on the mother I chose this new and different route.

So far as I know this methed has never been used before; but it appealed to me as a rational method, for the baby had been receiving blood and nourishment through the umbilical vein exclusively until three days previously. I gave him 100 cc of blood through this channel. At the time I thought of the possibility of a clot in the umbilical vein; but felt that its occurrence was unlikely in this type of case, for we know that the blood from these patients remains in a fluid state for a long time when withdrawn from the body and kept in contact with foreign substances. Since then I have performed necropsies in two cases of hemorrhagic disease of the newborn and dissected out the umbilical vein to its entrance into the liver. It was perfectly smooth and clean throughout; no blood was present.

At the James Walker Memorial Hospital, working in conjunction with the obstetrical service, we have the coagulation time and bleeding time done on all newborn charity babies. The color, weight, age and general condition of the baby is noted on the record with the coagulation time and the bleeding time. The method used by Rodda is followed by us. Up to the present we have examined and have complete records of 28 cases. Of this number 7 cases were definite cases of hemorrhagic disease of the new-born with clinical manifestation of hemorrhages. Of this seven, four were transfused and cured. The other three died before transfusion could be given.

CASE REPORTS

1. Baby Woodbury. Age 4 days, born in hospital. Negro. Wassermann * * * * Jaundiced. Weight 4 1-2 pounds. Died in seventh day of umbilical hemorrhage. Was going to transfuse but died just as we began. Coagulation time 20 minutes, bleeding time 15 minutes.

2. Baby Murphy. Age 2 months. Wassermann * * * * Jaundiced.

Bleeding from needle puncture from salvarsan treatment. Transfused. Bleeding stopped. Coagulation time 15 minutes; bleeding time 20.

3. Baby Harrison. Age 6 weeks. Had been bleeding from mouth, intestines, skin and bladder three weeks. Jaundiced. Poor condition. Weight 6 pounds. Transfused 120 cc from mother. Cured. Coagulation time 25 minutes; bleeding time 10.

4. Baby Flint. Age 2 days—brought to hospital because bleeding from cord. Baby well nourished, good condition apparently. Was given 10 cc blood subcutaneously and blood from mother was tested against baby's for transfusion preliminary to transfusion the next morning. Weight 7 pounds. Baby died suddenly during the night. Autopsy showed large hemorrhage over precordium and in left chest, hemorrhages in lungs, liver, kidney and intestines. Coagulation time 10 minutes; bleeding time 18 minutes.

5. Baby Williams. Age 4 days. Difficult labor, high forceps. Baby nursed 36 hours and then refused to nurse; had convulsions second and third day of life. Bulging fontanel. Spinal puncture very bloody, 20 to 30 c.c. withdrawn. Died. Coagultion time 20 minutes; bleeding time 15. Weight 6 pounds.

6. Baby Foy. Age 4 days. Well nourished. Bleeding from dorsal slit. Transfused through unbilical vein. Coagulation time 15 minutes; bleeding time indefinite.

A boy, well nourished and well developed; was born March 5, 1919, at 3 p. m., after normal labor, at the end of the fourth pregnancy. The baby weighed 9 pounds. There was no cyanosis, no jaundice and no history of any hemorrhagic tendency in the family. Three other children were living and well.

Very soon after the delivery a dorsal slit was made on the penis, and the attending physician went to town, 12 miles away. Four hours later, the nurse telephoned the physician that there was bleeding from the incision in the penis. The incision was sutured tight, and a number of local applications to stop bleeding were applied during the next 36 hours, but to no avail. The baby was brought to the hospital the second day in very poor condition. Bleeding from the dorsal slit incision continued; the baby was pale and looked as if he had lost considerable blood. He noticed very little that went on around him. He was given 15 c.c. of whole blood from the father. This injection was repeated in eight hours. At the time of the second injection the bleeding had practically ceased. Twelve hours later the blood injection was repeated, though there had been no bleeding since the second injection. At this time the baby's blood showed hemoglobin 25 per cent; erythrocytes, 2,000,000; coagulation time 15 minutes. We were unable to determine the bleeding time. The baby had taken very little food and took water only by means of a medicine dropper. A transfusion of blood was decided to be advisable. The mother was brought to the hospital, and the baby was given 100 c.c. of whole blood by way of the umbilical vein. The cord was kept wet with a saturated boric acid solution for eight hours before the transfusion, or during the time required to bring the mother to the hospital and to perform the transfusion.

7. Jack Carter, 3rd. Age 3 weeks. Juandiced. Poorly nourished. Weight 6 pounds. Hemorrhage subcutaneous, intestinal, and intracranial

Had three transfusions. Recovered. Coagulation time 15 minutes; bleeding time 20 minutes.

Delayed coagulating and bleeding time but no clinical manifestations of hemorrhage:

1. Baby Floyd: Coag. time 4 min. B. T. 10 min. 1st day. Coag. time 4 min. B. T. 10 min. 8th day.
2. Baby Evans: Coag. time 1 1-2 min. B. T. 13 1-2 min. 2nd day. Jaundiced. Feet scaly.
3. Baby Malpass. Coag. time 17 min. B. T. 7 1-2 min. 1st day. Coag. time 6 min. B. T. 8 min. 8th day.
4. Baby Pigford: Coag. time 3 min. B. T. 10 min. 4th day. Hands and feet scaly. Jaundiced.
5. Baby Meyer: Coag. time 4 1-2 min. B. T. 10 min. 5 days.
6. Baby Johnson: Coag. time 18 min. B. T. 18 min. 2 days. Weight 4 1-2 pounds.

A coagulation time more than 10 minutes and a bleeding time more than 6 minutes are definitely abnormal. I have divided these cases into:

1. Known hemorrhagic disease with clinical hemorrhage—7 cases.
2. Potential hemorrhagic cases with prolonged coagulation time and bleeding time. 6 cases. No clinical signs.
3. Normal cases with no clinical signs of hemorrhage and no change in blood findings. 15 cases.

This simple and easy test of determining the coagulation time of the newborn baby can be done by the general practitioner in the home and if done may give early and very valuable aid in the management and treatment of these cases. If a newborn infant shows a delayed coagulation time the safest procedure is to give him one or two subcutaneous injections of blood, 8 or 10 c.c. each, at 6 or 8 hour intervals. If the baby refuses to nurse and shows any signs of convulsion a lumbar puncture should be done. In these cases the coagulation time will give us the earliest possible indication of the true condition, and with the first appearance of bleeding a suitable donor should be secured for an emergency transfusion should it arise. Transfusion will cure this condition and its use should not be delayed too long. The cases that I have transfused have recovered. Those case which have died were not transfused.

There are a number of these cases that spontaneously stop bleeding; there are others that will respond to subcutaneous injection of whole blood, and this is easily obtained from any of the relatives. When given subcutaneously it does not have to be tested for agglutination and hemolysis. But there remains that smaller number which will die of hemorrhage if they are not transfused and transfused early.

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DISCUSSION

Dr. A. S. Root, Raleigh:

I want to congratulate Dr. Sidbury upon his ingenuity in thinking of this umbilical route for transfusion. This is the first instance in which that has ever been done, and this discovery should be of much practical value.

There is just one phase of Dr. Sidbury's paper upon which I would like to lay emphasis, and that is the hemorrhagic tendency that acompanies intracranial birth hemorrhages. I do not believe the medical profession as a whole is sufficiently alert in recognizing this condition. If intracranial hemorrhage is recognized within the first few days of life, and lumbar puncture is done and blood withdrawn each day by lumbar puncture until the fluid is clear, that child will be saved from a life of mental invalidism, and possibly from death. I think that any child that shows convulsions within the first few days after birth, is stuporous, refuses to nurse, and has twichings, should have a lumbar puncture done upon him. In all those cases in which blood is found, either an intramuscular injection or a transfusion of whole blood should be done. The

agglutionation time and bleeding time should be taken and the operation repeated, if necessary.

Dr. H. H. Harrison, Asheville:

I am glad that Dr. Sidbury brought out the fact that the mother's blood is not always compatible with the infant's blood. The father's blood is compatible with the infant's blood about as often as the mother's. As I remember, the incompatibility of the mother's blood in a large series was about 56 per cent, and the father's about 52. I was taught a few years ago that it was always all right to transfuse the infant with the mother's blood, and I think that idea has become pretty generally widespread.

Dr. L. W. Elias, Asheville:

This very admirable paper of Dr. Sidbury's is open to only one criticism. In Dr. Allen's and Dr. Holt's recent book they speak of hemorrhagic diseases of the newly-born, instead of the newborn.

Dr. Sidbury is not to be congratulated upon this paper, but we are to be congratulated upon it. I mentioned before the Southern Medical Association that Dr. Sidbury was a pioneer in this lumbar puncture work. I think he was the first man in the country to suggest that point, and now he comes before us and raises North Carolina to a higher standard in pediatrics by suggesting the use of the umbilical vein.

There is a question I would like to ask, whether or not he has done any work on the vein to find out how long it is patent so that it can be used. Has he done any work indicating that the vein may be patent longer than four days?

A very good point that Dr. Sidbury made is that of finding out the clotting time and bleeding time of these babies, and more important still, possibly, giving any of them that show symptoms an injection of blood subcutaneously. That is so simple that anyone can do it. Anyone who can give a hypodermic can extract some blood from the mother or father, whoever is present, and inject it into the baby.

Dr. I. W. Faison, Charlotte:

I am glad to commend Dr. Sidbury. The use of the umbilical vein is new to me. In what little transfusion work I have done I have used the sinus.

Now, why is it that Dr. Sidbury sees so many cases of hemorrhagic diseases in babies in Wilmington? Is it due to climate? We rarely see it in Charlotte. Or is it due to something else?

What we need is better obstetricians in our State, but not especially in this disease. If there were trained obstetricians we would not have so many cases of hemorrhage of the brain as we have. Whether we have better obstetricians in Charlotte than there are in Wilmington I do not know, but I do know that no town has a better one than we have. I have heard of only one case

of hemorrhage in the newly-born in my town within five or six years. It was bleeding badly, and without any hesitation I gave ten c.c. of horse serum. The baby got well and we had no more trouble.

Transfusion is a wonderful line of treatment. I have had the fortune to use transfusion within the last ten days or two weeks. A child five months old came to me from South Carolina with hemoglobin of thirty, white count of 8,540, and red count of 2,600,000. We gave her a transfusion of blood from her aunt, and in five days we had a red count of four million, and a white count of 5,600, and the hemoglobin went to eighty in a week. In a few days more the hemoglobin dropped to seventy, and the red count and the white count stayed steady. She wanted to go home, so, as her home was so far away, we gave her a second transfusion from the same donor. The hemoglobin in four days went to ninety, and the white blood count and red blood count were normal. The picture in this case was that of pernicious anemia, which meant death, if that were true. We baby men do not want to get the idea that we can have pernicious anemia in a child, therefore we went to work with transfusion and iron. I gave that baby thick vegetable soup made with eight, ten or fifteen different vegetables which never stopped cooking. She got three good meals of vegetable soup every day, and five drams of beef juice. This baby went home last Sunday morning.

There is another factor that comes in there. It will not always do to feel safe that the donor who can give you the right blood this time can give you the right blood next time. The donor should be tested the second time. I have known it to happen several times that the donor the first time would not be a safe donor for the second or third time.

There is no question but that Dr. Sidbury's treatment in hemorrhage of the newly-born is right and just and wise. In my case, knowing the community, I did not feel like risking anything, so I took the serum and used it. The injection of the blood subcutaneously or intramuscularly has been, in my cases, very beneficial and successful. I have not given it in the umbilical vein, because I have had so few cases, and I do not like to go into the veins.

This is a fine paper, and I want to thank Dr. Sidbury.

Dr. John LaBruce Ward, Asheville:

I want to add my praise of this paper of Dr. Sidbury's.

The Doctor said that any one who could give a hypodermic could give a blood injection. Personally, I think blood injection is a very valuable measure, and I have used it in many conditions. I think it is far preferable to the serum, because it is much better than the serum, and it is more available. Any physician practicing in the country, for instance, can use it if he carries a ten or twenty c.c. syringe and one or two needles. My practice is to have at least two

syringes, boiled, with the needles, and at least two or three needles. Go into the vein of the donor and draw off the quantity of blood that you want, and then immediately, having the child ready, inject it into the gluteus maximus. Draw out the needle quickly, put on a fresh needle, and inject the blood into the child. It works a miracle sometimes.

Dr. Faison:

In that case of mine, anemia, I went over that child and went over it to see if I could find where the trouble was. There was no vaginal discharge; I had the bowel actions examined and found nothing there; everything looked good, the heart and lungs and everything. Finally I found the child, which was five months old, had a little inflammation down in the bottom of one tonsil. When we got that cleaned out and treated with argyrol the improvement was very rapid, and the child was helped very much. That tonsil inflammation brought about the condition of secondary anemia.

Dr. Elias:

Recently some men, I think in Minneapolis, have been doing work on animals, experimental work, in intraperitoneal injection of whole blood, and watching the absorption of white and red cells, showing that practically a transfusion was made into the blood of these animals through the intraperitoneal route. I wonder if Dr. Sidbury has tried that in any of his cases, and with what results.

Dr. John R. Ashe, Charlotte:

I want to back up Dr. Faison's statement as to the relative infrequency of these cases in Charlotte. I think Dr. Sidbury must have, in Wilmington, a great many more than we have in Charlotte. I have counted up in my mind, and during the eight years I have been in Charlotte I have seen only three cases. Two of these were twins, one of which was bleeding badly, but got well. Two others I have seen out of town. One got well through my efforts, and the other through Dr. Sidbury's efforts.

Question:

In what percentage of the twenty-eight cases had pituitrin been used before the child was born?

None.

Dr. Sidbury, closing the discussion:

I want to say, in justice to the obstetricians of Wilmington, that one of these cases came from Charlotte.

In regard to the duration of the patency of the umbilical vein, so long as the umbilical cord is usable, is not too dry, the umbilical vein is all right. The two I have dissected out were all right, one on the seventh day of life and the other on the third day. Another point that occurred in doing this transfusion is this: Is there, or will there be, a clot in the umbilical vein? The fact that these

babies have hemorrhagic diseases of the newly-born probably eliminates that possibility. I feel that will be a negative factor to be dealt with if you decide to do an umbilical transfusion.

In regard to antitoxin, if it is inconvenient or impracticable to do a transfusion, if you have diphtheria antitoxin in your bag, the antitoxin will accomplish the same thing, but I believe the other is better.

As to pituitary extract given in these labors, while, of course, I have not definite information in regard to all, the majority did not have pituitary extract. Mose of them were delivered out of the hospital. I doubt if any had it.

Another point I want to emphasize is that this baby who was transfused through the umbilical vein bled only from one place and I doubt whether it would have bled from that place if it had not had a dorsal slit. He had no internal herorrhages.

In six cases there were no clinical symptoms, but these were cases of hemorrhagic disease of the newborn, because they had delayed coagulation time. I think that we see a great many more things if we look for them than if we do not.

In regard to the intraperitoneal route that Dr. Ward asked about, I have not tried it. If it is practicable I think it will be very useful, because it will be much easier. If this method proves to be as valuable as is indicated, I think it will, of course, reduce the transfusion to a very simple matter, and will make the injection of blood very easy for all of us.

INFECTIOUS DIARRHEA

Needham B. Broughton, A.B., M.D., Raleigh

Nothing offers greater opportunity for differences of opinion than an attempt at classification of intestinal disorders in early life. It would be difficult to find two pediatrists agreeing absolutely on any one selection.

Difficulty in classification is due not only to the fact that fermentative diarrhea may simulate infectious, but to the fact that mild cases of dysentery may pass unrecognized owing to the absence of pus or blood in stool. It is the mild unrecognized cases which are not improbably responsible for spread of infection when seen in epidemic form.

The majority of observers agree that the common house fly is one frequent cause of spread of infection, basing their belief upon the continued prevalence of the condition during late summer months when heat is less excessive but flies are more numerous. It is also spread by means of contact with acute cases or carriers, and by means of food, as cow's milk, condensed milk, ice-cream, and by water.

Infectious diarrheas have two synonyms, illeocolitis and dysentery. The latter term suggests unvarying relationship to Bacillus dyenstericæ. A large number of inquiries have been made in various directions with reference to predisposing and etiological factors of these diseases, for example, influence of seasonal and hygienic conditions, or natural and artificial feeding, milk pasteurization, etc.

While recognizing that in infantile diarrheas many possible factors have to be taken into consideration, there exists a particularly virulent type occurring in summer which there is every reason to believe has an infectious origin. Escherich in Austria and Booker in the United States were among the earliest observers of intestinal flora, but were unable to obtain pathogenic organisms of specific type in diarrhea stools. In 1898, Shiga isolated B. Dysentericæ in Japan and in 1900 Flexner isolated B. Dysentericæ in the Philippines. In 1903, Rockefeller Institute began investigation on local and general occurrences of dysentery bacilli in summer diarrheas of children in the United States. They found that frequent occurrence of microörganism which hitherto had been held to be of specific pathogenic action in human beings and to be the cause of that form of dysentery among adults and also among children which is characterized by ulceration and pseudomembranous lesions of the intestines and marked contagiousness. At the same time, for the same investigation, Wollstein at the Babies' Hospital, New York, failed to discover presence of Bacillus dysentericæ in 56 normal infant stools. Many attempts have been made to prove the agency of other types of bacteria, notably gas bacilli, various forms of streptococci, Bacillus coli, B. pyocyaneus and other bacilli. It is difficult to determine whether these organisms are primary or secondary invaders, so that no positive statement can be made of exact importance of any except Bacillus dysentericæ.

Ileocolitis seems prone to follow other diseases, such as broncho-pneumonia, or to occur in infants who have suffered from chronic intestinal indigestion and its consequent malnutrition. In typical cases the infecting organism invades the wall of the gut early, causing infiltration of the mucosa. The inflammation spreads to the submucous layer and involves solitary lymphatic nodules. They later may break down and ulcerate, resulting in punched-out cavities. In other severe types the superficial infiltration may be followed by necrosis which leaves irregular ulcers. Secondary to lesions of the bowel we find enlargement and congestion of the mesenteric lymph nodes. Dysentery bacilli do not invade the blood stream except in very rare instances, and the general symptoms are due to toxins. In this way secondary infection can be explained, such as bronchopneumonia. Since the disease is systemic toxemia as well as local infection, we usually find parenchymatous degeneration to greater or less extent in liver, kidney and spleen. True nephritis rarely results.

The intesinal flora of children under three years of age is in a transitional stage. The flora of infancy is being gradually changed by mixed diet in which the relative proportion of the ingredients

are changed. The carbohydrates and proteins are most important in determining alteration of bacterial types.

Many acute disturbances of the gastrointestinal tract arise from temporary inability of the individual infant to digest the food. Various outside causes such as temperature, humidity, environment or acute diseases must be considered, and it is from these disturbances which are usually caused by improper administration of one of the food elements, such as carbohydrate, fat or protein, that bacterial infection is differentiated.

Symptomatology—The onset is sudden and the incubation period is variable, probably short and often only a matter of a few hours. No prodromal symptoms. Rise of temperature to 104 or 105, and fever is continuous for several days. Prostration is dependent on severity of case and when present shows picture of complete collapse. This can occur in few hours after onset of attack. Eyes are sunken, tissues seem dry and washed out, and nervous symptoms are common, extreme restlessness and convulsions. Vomiting present early and severe, stools vary 20 to 30 a day, consisting chiefly of mucus, epithelial and bacterial detritus intimately mixed with varying amount of blood which is darker than flesh blood. Reaction is alkaline. Usually preceding each stool is abdominal pain; and tenesmus during and after stool is one of most characteristic symptoms. In mild cases blood may disappear after few days but an excess of mucus continues throughout acute stage. In severe cases blood persists for a longer period. When ulceration of follicles occurrs after acute stage of congestion has passed, the stools become less frequent, dark brown or green in color, with offensive odor. Blood is seen occasionally but not in large amounts, mucus or mucopus is always present.

Marked loss of fluid leads to condition of depletion with depressed fontanel, hollow eyes, dry skin, sunken abdomen and modified breathing. Acidosis may exist.

There is a special form of ileocolitis called membranous colitis. The stools are watery at first but blood appears early; abdominal pain and tenesmus are pronounced, often leading in latter to prolapsed ani. On wall of prolapsed gut sometimes can be seen patches of pseudomembrane, and the stool may contain threads of it. In some cases there may be slight constipation at the onset, so that toxic symptoms, vomiting, delirum, and stupor simulate meningitis and the true nature of the attack may be masked. Sometimes death may follow before diarrhea sets in.

Several other conditions must always be remembered, however, as failure to recognize may have a serious consequence.

The appearance of blood in the stool in early life, but especially in infancy, suggests the possibility of intussusception. If vomiting and abdominal pain are present and if enemas bring only blood and small amount of fecal matter intussusception becomes the most probable diagnosis. Comfirmatory sypmtoms are absent of fever

and presence of sausage-shaped tumor, usually in right iliac fossa. At times the tumor can be felt by rectal examination.

The presence of vomiting should always suggest the possibility of meningitis, which often begins with moderate diarrhea. Pneumonia, pyelitis and even otitis media also may be ushered in with gastrointestinal disturbances. In all of these diseases the diarrhea is rarely severe enough to cause confusion with ileocolitis. Typhoid fever may simulate ileocolitis but the diarrhea of the latter is much more severe.

Poliomyelitis in the preparalytic stage not rarely is diagnosed as enteritis; even more frequently in the abortive forms. Careful observation from lumbar puncture should give a right conclusion, although in the absence of an epidemic the decision is not easy to make.

Confusion with fermentative or functional diarrhea due to disorder involving intestinal contents rather than intestinal wall itself is very great, and hard and fast lines of demarcation between types are difficult.

Treatment—There are two distinct schools of teaching, both of which quote equally as good results with entirely opposite dietetic treatment. Boston bases the treatment on the inhibitory action of lactose in certain fundamental biochemical and bacteriological reactions, which are as follows: Talbot divides organisms into two classes: first, dysenteric groups; second, gas bacilli and allied organisms. Kendall seemingly supports him, for he claims the dysentery bacilli, when grown on media of excess carbohydrate, use carbohydrate first and only enough protein to furnish nitrogen requirement and their living body structure. Since toxic products are largely the result of protein breakdown, we should expect a minimum of toxicity produced in the presence of an excess of carbohydrate. So treatment consists in furnishing carbohydrate in form of dextrose and dextro-maltose solution as high as 8, 10 and 15 per cent strength. In cases where vomiting was not severe this was done by administering by mouth. On the contrary, the gas bacilli flourished in carbohydrate and if given carbohydrate food will continue to multiply and aggravate the clinical symptoms. In the treatment of this use lactic acid milk or Eiweiss milk (protein milk), the lactic acid being detrimental to the development of the gas bacillus. In severe types of infection there is real toxic shock and symptoms have to be combated with other means than diet. A safe diet formula is fat-free lactic acid milk (a formula low in fat and protein and sugar proportion 5 to 6 per cent).

In dysentery give lactose with the belief that you benefit in three ways. First, by diminishing absorption products of protein decomposition; second, by ingestion of readily assimilable foods; third, by inhibition of the growth of putrefactive organisms or formation of specific bacterial toxins as result.

The opposing school bases its treatment on adminstration of protein milk in all cases of diarrhea with equally as good results as

the carbohydrate school. There is an argument against giving carbohydrate as a therapeutic measure on the theory that carbohydrate is absorbed in the small intestine and that it does not reach the lower bowel where the dysentery bacilli are growing. Then others take the stand that the split fat and protein in protein milk are very easily assimilated; others, that its therapeutic value is due to its lactic acid content. Signorelli, in New Orleans, in his efforts over a period of one summer, showed that it was not adoption of a particular food or of any particular set formulas that gave such good results, but rather education as to hygienic treatment and the necessity of prompt and efficacious management of every intestinal derangement in its incipience.

This is further borne out, seemingly, by the phenomenon of De Herelle with Bacillus dysenteriæ, which is an expression of the lytic reaction occurring between a bacterium which is inducing an infection in an animal and a substance elaborated in that organism, probably by the leucocytes and other tissue cells, in response to the stimulus of the metabolic product of the invading bacterium. Accordingly, if there is a combat going on between bacteria and something secreted by the organism it is not necessary to try and combat the condition by dietetic means, but to try and give the most rational food which would best sustain his nutrition and thus prolong life, the theory being that if the child's nutrition is sustained long enough the B. Dysenteriæ will be a self-limited condition.

Treatment of collapse and marked dehydration by hypodermoclysis, six ounces every four hours. Outside of an initial dose of castor oil very little medication by mouth is necssary. The necessity of supplying fluid is urgent. Vaccine therapy seems to show the best results, if used as autogenous vaccine in chronic cases. The prognosis is guarded.

DISCUSSION

Dr. A. S. Root, Raleigh:

Dr. Broughton's paper on infectious diarrhea is timely, because we are on the verge of the dangerous season of the year in so far as infancy is concerned. It is the season when about 2,500 infants under two years of age die every year in North Carolina. Without going into the matter into detail, we all know that the essential part of the treatment is dietetic. I, for one, believe that the Boston teaching is based purely on theoretical grounds, and that it does not work. Feeding baby with infectious diarrhea, or any kind of diarrrhea, with sugar adds fuel to the fire. Lactic acid milk, to my mind, is the thing that works wonders in these cases. Give the child, at first, skimmed lactic acid milk, and later, as it gets better, leave the fat on. I think the very best investment that a health department in any community can make is to make lactic acid milk or to provide some means whereby this product is made available to all classes of people during the spring and summer months. For the last several years it has been made in Raleigh. Year before

last I had a series of 136 cases of summer diarrhea, which includes all types, and last year I had a few over this number, all fed upon lactic acid milk. Three children died year before last, and four last year. Of course, other treatment was given, intraperitoneal injections, intravenous injections, blood transfusions, etc., but the lactic acid milk was in large measure responsible for the low mortality. Last year smaller places around Raleigh became interested in making lactic acid milk, and in Smithfield and Benson lactic acid milk was made by the Woman's clubs there. Recently I sent out a questionnaire to the doctors who used it, receiving replies from about twelve. All of them commended its use, and most of them had a mortality of about nil. I believe that lactic acid milk is a most important factor in saving these children's lives. There are other products which are all good seconds, but I do not believe that any of these will take the place of lactic acid milk.

Dr. L. W. Elias, Asheville:

This paper, as Dr. Root has said, is a very timely one. There are two points which I would like to suggest, out of a great many. One is that Dr. Broughton mentioned as initial treatment, which hurt my favorite corn, a dose of castor oil. I would like to know what reason he gives for this, because nature is usually doing the purgation.

Regardless of the different theories as to the treatment of this disease—and this is the second point which I want to bring out—one thing seems to stand out above all others. We have tried the lactic acid treatment, the carbohydrate treatment, etc., and all seem right. The important thing seems not to be the food you give, but that you do not starve the child. These children must be saved by feeding. We feed typhoid fever, puerperal fever and tuberculosis patients so that they can fight the infection, and these cases of diarrhea must be fed if they are to get well. Fit your treatment to what they can absorb—and most of it can be absorbed. If there is one food that will fit nearly all cases, it is protein milk. In other cases carbohydrate is the best food. The important thing is to feed the patients and not starve them, as we used to do.

Dr. Root:

It is perfectly logical why lactic acid milk or a high proteid milk should be used. One of the great mistakes in the treatment of infectious diarrhea is to keep a baby on a starvation diet too long, on animal broths for days and days. The tissue destruction is tremendous. Animal protein is the food which repairs tissue waste. Therefore, a food low in fat and sugar and high in protein, should be given to a child who is suffering from this disease.

Dr. I. W. Faison, Charlotte:

I have been treating diarrhea for a long time, and I can not agree with Dr. Root entirely. I do not agree with Dr. Elias about castor oil, either—not that I do not give castor oil, but I would not take castor oil for anybody on earth. I do give it sometimes, if the

mother will give it. I give it to grown people sometimes, if they will take it, but I do not insist upon it, and I would not take it if all the doctors in America insisted upon it. But if a child has been fed wrong, there is something there which would be better out of it. I think any mild purgative might be used. I like milk of magnesia. As soon as the bowels act from that I stop the purgatives. I believe a man who is vigorous in handling infectious diarrhea at the beginning can do what he is going to do in the first two or three days of active treatment, even to the point of giving injections of nitrate of silver, a dram to a pint. That has done more good and quicker good than any other remedy I have ever used.

Dr. Broughton has covered the scientific side of his subject beautifully.

It is my rule to give a little purgative and feed on water. I do not give broths at all, because I try to get away from those things. Give plenty of water for two or three days. After that I am a sugar and carbohydrate feeder. I use cereal, well cooked and well fed. That has been my plan, and it has been very satisfactory to me. There is absolutely no limit to the amount of cereal that I give. After two or three days I give this lactic acid milk, one feeding a day, and after two or three days increase it. I am a backer of the Boston idea. I have been there with them, have seen them and talked with them and have heard them talk. I think the plan they work on is sugar and cereal for the first few days, with plenty of water. Then, if the diarrhea continues too much and the peristalsis is too great, I would not treat the case without opium in some form. One injection of nitrate of silver has been very efficient in stopping the blood. It more quickly stops the pus coming when ulcers have been formed. I look upon nitrate of silver as the best remedy for mucous membrane diseases, whether of the nose, throat or intestines.

I use granulated cane sugar, by preference. As much as four or five or six tablespoonfuls a day has never produced anything but good. It is the fuel in the furnace. Do this for several days, and then give lactic acid milk. That is, for infectious diarrhea. The satisfaction to my plan is that it has been successful. I do not have 150 cases a year, but the death rate has been usually satisfactory. The only worry about it is that if there should be one child I love better than another, and do the most for, that one dies.

Dr. Broughton, closing the discussion:

In the beginning of my paper I said that I did not think we would find any two pediatrists agreeing on this subject, and the more we discuss it the more true that seems. I tried to state both views in this paper. It has been my experience, both in the Babies' Hospital in New York and during what little time I have been back in Raleigh, that the use of protein milk and lactic acid has been the most satisfactory. I have never seen the use of carbohydrate, and have never had the chance to use it.

I may say, in regard to castor oil, that I thought if I sat here long enough some one would answer that criticism for me. I think

that Dr. Faison answered it exactly. I think there is something in the child, poisoning it. I do not use castor oil always; sometimes I use calomel, sometimes milk of magnesia.

PYELITIS IN CHILDREN

James A. Martin, M.D., Lumberton

Pyelitis, or inflammation of the pelvis of the kidney, I believe is a condition that is more often overloked than it is diagnosed by the average physician. I dare say that in the practice of the average busy general practitioner not a day goes by that recognized or unrecognized he does not treat some patient who has pyelitis.

As to etiology: This condition may occur primarily or secondarily. Usually it is secondary to some other disease. Although it is a bacterial infection there is usually some focus of infection from which it originates. Often the cause may be found in infected teeth, infected tonsils, an extension from a cystitis, and occasionally an ascending infection from a vaginitis or a urethritis. Drugs that may set up an acute attack of pyelitis are turpentine, lead, mercury, urotropin, etc.

In very young children I believe acute pyelitis is usually due to an ascending infection from the bladder. My reason for saying this is because the biggest percentage of children who have pyelitis are female and practically all have an associated cystitis, and when by the use of alkalies and possibly irrigations and ingestion of large quantities of water you have relieved the cystitis the pyelitis is usually relieved also.

The organism which is practically always found is the colon bacillus and this is generally accepted to be the real cause of the inflammation. However, it is interesting to note that Dr. H. C. Bumpus and Dr. Meissner of the Mayo Clinic, from their examinations of cultures obtained from bad teeth and tonsils injected intravenously into guinea pigs, have concluded that pylonephritis is more often due to streptococci, and that the colon bacteria is of secondary importance. However that may be, we rarely ever find streptococci in the urine of a pyelitis patient, while the colon bacillus is practically always present.

As to the symptoms: There may be many or there may be few; they may be mild or severe, but in acute pyelitis the onset is usually sudden. These little children often have a chill followed by a rapid rise in temperature, often as high as 105 or 106; vomiting, limbs aching and backache (if the child is old enough to tell you where his pain is). The backache may be unilateral or bilateral, depend-in upon whether the infection is confined to one or both sides. The temperature is very variable and may vary greatly in twenty-four hours. It is a septic temperature. There may be also frequent and painful urination, which is practically always the case when we have an associated cystitis.

As to the diagnosis: Pyelitis may be diagnosed most positively or excluded by patient and frequent examination of the urine. You may not find pus cells for one, two or three, or even four, microscopical examinations of the urine. If you have a child with any of the above symptoms and you have cause to suspect pyelitis you may make repeated examinations of the urine before you find pus cells. This is readily explained, because we all know that if we have a unilateral pyelitis and have a blockage of the ureter, either by a stone, a twist in the ureter or concentrated pus, we are not going to find anything in the urine till that blockage is removed and the pelvis of the kidney begins to drain. Also, extreme tenderness in the costovertebral angle is a point that aids in diagnosis.

I want to say, however, that the degree of pyuria has very little to do with the severity of the case. A robust child of good resistance may have great quantities of pus in his urine and be apparently in good health for a long time and have very few symptoms, if any, of pyelitis; while, on the other hand, a frail, anemic, run-down child with a small amount of pyuria may have severe symptoms of pyelitis and may have an attack that will prove fatal.

One of the most important single symptoms is the temperature, and I will go so far as to say that if you are treating a child that runs a temperature of 105 and 106 and you cannot explain the cause of this temperature you are usually safe in considering pyelitis and oitis media, because the chances are that you will soon find pus in the urine, or find an otitis.

As to the differential diagnosis, I shall mention only one disease that pyletis must be differentiated from, and that is malaria. I mention this particular one because it is the one disease of all others that pyelitis so closely resembles. In acute pyelitis in children the symptoms may be identical with those of malaria, presenting hot, cold and sweating stages with free fever intervals; and chronic pyelitis with its insidious onset without pain or remittent temperature curve, and probably with chills occurring with peculiar regularity, suggests malaria very strongly.

But the differential diagnosis of malaria and pyelitis can readily be made by the use of the microscope. In acute pyelitis you will find a leucocytosis, while in malaria the white cells are not increased; and a stained specimen of the blood may show the malarial plasmodium, while examination of the urine will show pus cells in pyelitis.

The treatment of pyelitis: Many cases of pyelitis if left alone often get well spontaneously, but the natural process of irrigation, as the urine sweeps the infectious organism down through the renal pelvis and the ureter into the bladder. But, of course, this line of cure can only take place where the passages are well open. The first thing to do in the treatment is to look for the focus of infection, and if a focus of infection be found it should be removed; if infected teeth or tonsils, remove them.

As to the treatment of pyelitis, *per se*: The expectant treatment should be first tried. This should include rest in bed, liquid diet, the forcing of fluids, and possibly counter-irritation over the kidney region, or at least the keeping of this region of the skin surface under conditions of increased temperature. Counterirritation by the use of Papuelin Cautery, mustard-plasters, hot poultices or fomentations or hot water bags over the kidneys have been proven to be of real value. A thick cotton jacket over the kidney region should supplement the counterirritation. The bowels should be well opened. Above all, institute a free natural irrigation of the kidneys by keeping the patient on liquid diet and forcing the amount of ingested water either by mouth, subcutaneous infusions, or by bowel. In practically every case urotropin should be tried. But if you have used urotropin in large doses for a week or ten days and failed to get results its administration should be discontinued, for it has been proven by Dr. C. F. Burnam, of Johns Hopkins University that urotropin is broken up and excreted in the urine as formalin in sufficient quantity to be of antiseptic value in only about two cases in ten.

In very young children I very rarely use urotropin. If you will observe the above hygenic measures and put these little fellows on sodium bicarbonate (I usually have them to boil the water and use two drams of sodium bicarbonate to the quart and get them to drink large quantities of it) and potassium citrate you will often get excellent results without the use of any other drugs. I recall two severe cases that I treated recently and effected a cure by the use of these two drugs alone. In older children it is advised some authorities that the bladder should be irrigated daily with a solution of boric acid, and this may be followed by injections of 2-5 c.c. of a 1 to 5 per cent mercurochrome 220.

Vaccines I believe to be of value in selected cases. And autogenous vaccines when properly made I believe to be of great help.

In conclusion, let me say that I have given you my own experience in dealing with pyelitis, and my experience, of course, has been somewhat limited, as is that of every physician who does not confine his practice to one line of work. But it is a subject in which I am deeply interested because I feel that the average physician too often fails to recognize pyelitis, and in our failure to recognize it we often lose patients that we might otherwise have been able to save if the true nature of their disease had been recognized.

DISCUSSION

Dr. J. Buren Sidbury, Wilmington:

While Dr. Broughton's paper is timely now, Dr. Martin's paper is always timely in pediatrics. Pyelitis should be considered in every case that is treated. I think the two points that Dr. Martin brought out very forcibly are the two main points in the treatment

of pyelitis, and that is water and alkali. When those two treatments have failed I think you may be justified in giving urotropin. Some authors have said that it is well to switch from one to the other, keeping the patient a few days or a week on one and then a week on the other. I think in a pediatric program three things are always in order, and they are discussion of breast feeding, of pyelitis and otitis media, so I want to thank Dr. Martin for his paper.

Dr. H. H. Harrison, Asheville:

While urotropin is theoretically a good drug, yet we must remember that it is active only in an acid medium, and so we must see that the urine is acid. There are two or three ways of doing this. I believe the most popular way at present is the use of acid sodium phosphate. As to the dosage, Dr. Martin said to give large doses. I have seen children, time and again, take forty grains a day. I do not believe there is any harm in giving this amount if the urine is watched for red cells. I believe the appearance of red cells is about the first indication of damage to the kidney from urotropin. It is valuable if given in large doses, and if we insure that the urine is acid.

Dr. I. W. Faison, Charlotte:

I saw a case several weeks ago that got one hundred grains of urotropin and two hundred grains of sodium acid phosphate in twenty-four hours. That sounds like a pretty big dose, but it did no harm—and no good.

I have had a few cases in my life in which I thought urotropin did some good. I believe, however, in the water and alkali treatment. I have under treatment now a girl nine years old who has had pus for two or three years in spite of everything I can do. She is healthy, jumps a rope, goes on skates, and looks as well as any one. Her temperature will shoot up and then go down. This little child had a temperature for several days of 104 to 106, and got one hundred grains of urotropin and two hundred grains of sodium acid phosphate.

We do not know the last word in pyelitis, and we do not know yet how to cure it. Outside of the water and alkali treatment I do not believe there is much else we can do. I have had pictures made for stones, and have had genito-urinary men go in with catheters and wash out the ureters, but I believe it is always with us, and I do not believe any one can cure it.

Dr. Ben H. Hackney, Lucama:

I was called in consultation a week ago to see a girl nine years old whom the physician had been treating for pyelitis for more than three weeks without result. He had been giving enormous doses of urotropin and of alkali, alternating them. The child had an enormous amount of pus, and upon examining a vaginal smear we found that she had a very profuse gonorrheal infection.

I saw the same thing not over a year ago in a girl four years old—gonorrheal infection in a girl treated for pyelitis.

I like to keep these patients in bed to keep them warm, and I keep even larger children on milk diet for a while, with alkalies (sodium bicarbonate especially) and water. As to urotropin, I have probably never given large enough doses, because I have never felt that it was of benefit.

Dr. A. S. Root, Raleigh:

The most important thing in treating pyelitis is to treat the child. Pyelitis is not a local disease; it is a constitutional disease, and the treatment in pyelitis is to treat the child, primarily. Get the child in better condition and then the pyelitis will clear up.

Practically all cases of pyelitis, except in the newborn, occur in girls. Practically all cases of pyelitis in the newborn occur in boys.

Dr. J. E. Kerr, Winston-Salem:

I do not want any one to leave this discussion this afternoon without being convinced of the importance of using all the means at his command to make a diagnosis. I reckon Dr. Faison is right about our not curing pyelitis. I do not know much about the treatment, but I think it is the greatest satisfaction in the world to know what we are driving at. We have dwelt a good long while on routine Wassermann's. Well, there are many doctors, I expect, in North Carolina who are not using Wassermanns now, who are not using the State Laboratory of Hygiene for that purpose, though it is a free institution and any of us can use it. I do not know whether the Doctor explained how to secure a specimen. I think that is one of the most important things that has been said. In these cases with symptoms of pain on micturition and chill, if you are careful about securing your specimen you can know whether or not the condition is pyelitis. Sometimes the pus comes in showers. If you examine only one specimen you may not find the pus, but if you examine it time and time again, when you have fever, you will find pus sooner or later, and you have the satisfaction of knowing that you diagnosed the case and that you have pyelitis or have not pyelitis. I do not want any one to go home from this meeting today counting himself a good doctor unless he uses the microscope in all these fever conditions.

Dr. W. C. Verdery, Fayetteville:

Dr. Martin did not bring out the fact that mothers sometimes bring babies with slight pyelitis and chronic diarrhea, and we often forget the pyelitis and treat the diarrhea. If you treat the pyelitis the diarrhea will disappear.

Dr. Faison mentioned the fact that he does not know when pyelitis is cured. But neither do the urologists know. I turn them over to the urologist for three or four months, and he sends them back to me—these old chronic cases—sometimes in worse condition than when I sent them to him.

Dr. L. W. Elias, Asheville:

A paper was read at the last meeting of the American Medical

Association on "Pyelitis without Pus." That seemed rather startling to me. The diagnosis was made on high fever and on colon bacilli in the urine. When the fever ceased the colon bacilli disappeared.

Dr. Freeman, of New York, mentioned, that they had a case which ran fever and had pus, and they could do nothing with him. It was noted that the urine was kept alkaline through the day, but would get acid in the night, when the child slept.They got over that by giving the alkali during the night.

Keeping these patients on a milk diet may not be at all sufficient. You can give them lots of things that will not hurt them but will support them. They often need building up and have to be treated by food.

Dr. L. J. Butler, Winston-Salem:

I had a case of chronic pyelitis that I put on rather heavy alkalies and treated for several weeks, giving these alkalies during the day, but the pus did not clear up. Upon examining the morning specimen it would be acid. So I had the mother continue the treatment during the night, and four or five days after starting the night treatment it did clear up.

Dr. John LaBruce Ward, Asheville:

The point of differential diagnosis is particularly applicable for those physicians who practice in malarious districts. Dr. Thompson, of Edinburgh, states that if you get a chill in infants it is from pyelitis. During considerable experience in malarious districts I have never seen a chill from an infant under eighteen months of age. If an infant under two years of age, or certainly under eighteen months, has a chill, the chances are that it means pyelitis.

Dr. Faison:

I would like to suggest that my experience is that the chill in pyelitis comes at night, and in malaria it comes in the morning.

Dr. J. R. Ashe, Charlotte:

I would like to state that a large percentage of the cases that I see with other conditions have pus in the urine. I cannot venture to say how many, but I believe half of them show some pus, and I do not know whether or not to call them pyelitis. We have an apparatus in the laboratory for showing the amount of pus, but the length of time the urine is centrifuged would have some bearing on it.

Pyelitis is one of the niceest things we have to treat in children, because they do get well. I do not know that we cure them, but they do get well.

Dr. Martin, closing the discussion:

I appreciate the point which Dr. Hackney brought out about

being careful in collecting these specimens. Of course, if you are not careful you may be misled.

As to the use of the microscope, of course you must use it often. One examination, or even four or five, will not rule out pyelitis if the patient has a high temperature that you can not explain in other ways.

As to curing pyelitis, it is hard to say when a child is cured, but at least we can relieve them by putting them on urotropin, alternating with alkalies. We should use, of course, large doses of urotropin. The point I want to lodge is to be on the lookout for pyelitis more than the average physician has been. Next, the main thing in the treatment, I believe, is plenty of water and alkalies. The third thing is, if you have a little fellow who is having chills and having high temperature, do not go ahead and treat him for malaria unless you are sure, that it is malaria and not pyelitis that you are dealing with.

PURULENT MENINGITIS WITH REPORT OF CASES

W. C. Verdery, M.D., Fayetteville

Purulent meningitis has for the past ten years been written about and discussed by the most scientific men in the United States and Europe. However, very few cases reported in the literature have made a complete recovery.

During the past two years I have seen in my practice and consultation work nine cases of this form of meningitis in children under two and a half years old. Two cases of pneumococcus infection, following bronchial pneumonia. These two cases ended fatally after duration of four and five days respectively. Two cases of influenza bacillus; these followed ordinary colds and both terminated fatally. In two of these cases the organisms were undetermined; both ended fatally. Two cases of staphylococcus albus; one of these cases ended fatally; the other recovered, by daily drainage of the spinal canal and the administration of autogenous vaccine, beginning with the minimum dose of seventy million bacteria each day. One case of micrococcus catarrhalis. The micrococcus catarrhalis meningitis is the one I am offering for discussion, and I am giving it in detail because of the rarity of this condition.

The history of this case up to the present is as follows: Baby W. Age fifteen months; male; white; normal delivery; second child of healthy parents; breast-fed for twelve months, followed by mixed feedings. Child had never been sick except slight colds; has ten teeth; walked at fourteen months; is not backward in speech for its age. The fontanel has partially closed; weight thirty-two pounds.

On January 1, 1922, he developed bronchial pneumonia with

the usual sudden onset. The temperature was 104, with rapid respiration. The pulse-respiratory ratio was disturbed and the usual physical signs present. Nothing unusual occurred on the first three days of the disease. On the fourth day I noticed an internal strabismus of the left eye and bulging fontanel, with further rise of temperature to 106-2-5.

A large puncture was made, the spinal fluid was under considerable pressure; 30 cc of fluid was withdrawn. Laboratory findings were as follows: cloudy, Pandy's two plus, sugar negative, very marked increase in leukocytes, numbering to 126 per C. M. M. culture on blood agar positive, micrococcus catarrhalis. We doubted these laboratory findings, thinking of the possibility of contamination, and the following day another examination was made with the same results.

At the time of the first lumbar puncture classical physical signs of meningitis were not present. However, twenty-four hours later these symptoms developed: positive Kernig and Budzinski with rigidity of muscles of neck, exaggerated knee jerks; and two days later ankle-clonus was present. On the third day of the meningitis and the seventh day of the pneumonia the lungs began to clear. Another specimen of fluid was examined and cultures made on blood agar, Loffler's blood serum and agar-agar. After eighteen and forty-eight hours incubation at thirty-six degrees centigrade, culture showed the same results as in first specimen. Three days later the cultures were made with the same findings, spinal fluid very bloody. One week after the disease began another series of cultures was made with results negative, Pandy's one plus, sugar negative. Four other cultures were made at intervals of one to two days. The first of the series was positive micrococcus catarrhalis and the three remaining negative.

The study of the organism was carefully made, as the similarity of the meningococcus intercellularis, the gonococcus and the micrococcus catarrhalis were kept in mind.

At this time a thorough study of the literature relative to organisms found in infection of the meningis was made. Only two cases of micrococcus catarrhalis meningitis were found in the literature, which were reported by Cot and Roberts, of Paris, in 1921 in Paris Medical Journal, Volume 41, pages 318 to 321. Both of these cases were mixed infections of the associated organism micrococcus catarrhalis and enterococcus.

The patient was comatose from the beginning of the meningitis and remained in a stupor for nine weeks. Twenty-eight lumbar punctures were made on twenty-eight consecutive days. Each time the fluid was under marked pressure and very cloudy. On several occasions the fluid was mixed with blood and similar in appearance to fluid obtained by puncture on birth injury cases.

The patient would improve immediately after each puncture and gradually drop back into a stupor in twelve to eighteen hours

with rise in temperature. At such times another puncture would be made. After twenty-eight consecutive punctures on twenty-eight consecutive days the symptoms were not as severe as in the beginning of the disease and the drainage was continued as the symptoms indicated.

The other treatment used in connection with the lumbar punctures was such drugs as sodium bromide, utropin, and brandy by mouth; hydrotherapy for reduction of fever and control of restlessness. A stock vaccine of micrococcus catarrhalis was used in the beginning of the disease, which tended to improve the pulmonary condition. The diet consisted of skim milk, beef juice, vegetable waters, orange juice, egg albumen, etc, during the course of the disease. During the convalescent period a more liberal diet was prescribed. The projectal vomiting was so marked for four days that very little food was retained. At that time nutrient enemas were used.

Throughout the course of the disease the patient had transient strabismus of one or both eyes and occasional nystagmus. Fine muscular contractions were very marked and contraction of right leg and thigh were constant. The temperature of the first month of the disease ran very high, never below 101, and on two occasions reached 110 F. However, the temperature was usually from 103 to 106. During the second month the temperature ranged from 101 to 104, except on February 16th, when the temperature reached 110. When the temperature would rise the patient would become comatose, a lumbar puncture would be made and thorough drainage from 30 to 45 c. c. of fluid usually drawn. During the twelfth week of the disease the temperature was normal with only slight remission.

The loss of weight was marked, the child losing nineteen and a half pounds; the sight was impaired and incoordination of feet and hands was present. By careful feeding, fresh air and sunshine, and by instituting all necessary hygienic measures the patient has gained rapidly and made a complete recovery. At the present time his weight is thirty-four pounds, he has no deformity or paralysis, mentality good, and walks and talks as a normal child.

Conclusion:

In reviewing the literature I found that recoveries from purulent meningitis, due to organisms other than the meningococcus, are few. Most of these recoveries have occurred after lumbar puncture alone.

It must be understood that one case of micrococcus catarrhalis is not conclusive evidence that this treatment as described herein is without its objection. However, in the face of the present day knowledge, no serum or vaccine is available.

DISCUSSION

Dr. A. S. Root, Raleigh:

I had the pleasure of seeing that case with Dr. Verdery, and his

diagnosis was micrococcus catarrhalis meningitis. I did not see, since the morphology of micrococcus catarhalis and the morphology of micrococcus lanceolatus are identical, how he was able to differentiate the micrococcus catarrhalis from micrococcus lanceolatus. We gave the child ten c. c. of Flexner's serum at that time.

How did you differentiate it from the lanceolatus?

Dr. J. R. Ashe, Charlotte, Chairman:

I think we ought to congratulate Dr. Verdery upon his patient's getting well after so much loss of weight and such a long period of illness.

Dr. H. H. Harrison, Asheville:

Is it very unusual in children to have meningitis from these organisms? It was my impression that a child might have a secondary meningitis from any organism causing bronchopneumonia. I know we get it from the pneumococcus quite frequently, and from the influenza bacillus.

Dr. Verdery, closing the discussion:

In reply to Dr. Root's question, the bacteriologist I used said that the micrococcus lanceolatus did not produce colonies within eighteen hours, and in producing colonies produced them by fermentation and moisture. That is the only differentiation. This did not produce fermentation. The micrococcus catarrhalis can not be differentiated from a new organism that has been worked up by Dr. Davis, and which he calls the micrococcus Florens.

THE ROLE OF TRANSFUSION IN PEDIATRICS

H. H. Harrison, M.D., Asheville

I have not chosen this subject because I have anything new or original to present, for all I have to say will, I am quite sure, be things that you already know, for current medical literature has been rather full of articles on this subject. My only object in choosing it is to hold it up as a most valuable therapeutic measure, that could be used far oftener than it is, and to call your attention to the fact that we are seeing many cases that could be greatly helped, and not a few that could be cured by it, and it alone. It is one remedy that stands out as a pure specific, and these are indeed rare. To tell the whole truth, transfusion is a specific for three diseases—a virtue that no other of our specifics can boast, and still it is rarely used. It is most useful, too, in a good many other conditions.

The reasons for this almost criminal neglect are not hard to find. The first and most important is that men are afraid of the bugaboo of typing—and this is a most important phase of the subject. The second is the technique—which I admit, too, up to a short time ago was rather formidable in children. But I believe

most men in our profession today can do both—certainly those who are in the habit of using a microscope (and who today is not), and who is an adept in one of the latest fads in medicine viz. intravenous medication.

In pediatrics, as I have said, there are three positive indications, and the infant or child who does not get it is not getting his just dues. The first is hemorrhagic disease of the newborn. It is to be remembered that this may cause hemorrhage before birth; that it is apt to grow worse until about the third or fourth day; that on or about the fifth day it begins to improve—that is, the clotting time grows shorter; and that it disappears spontaneously by the tenth, or always the twelfth, day; that it may occur coincidently with jaundice of the newborn, which itself interferes with the blood-clotting time but is separate and distinct from it, for in the former the bile salts combine with the blood calcium and interfere with clotting, while in the latter deficiency of calcium plays no part. Just what the pathology of this disease is no one has proven, but we can cure it promptly and surely and any evidence of its presence calls for quick action, especially if during the first seven days of life. Some advocate taking the clotting time of all infants at birth, but it has been found that in many in which this was found abnormally long there occurred no hemorrhage. The amount of blood and methed of administration will be taken up later.

A second positive indication is hemophilia. This manifests itself most commonly during the period of childhood, rarely before the age of two, and quite often nature remedies it shortly after childhood. Transfusion relieves promptly but only temporarily. The third condition in which it is specific is severe hemorrhage.

Then there are a good many other conditions in which it is worth a great deal; probably the *greatest* total amount of good can be accomplished in this latter class. We may generalize by saying it is a most useful measure in all severe secondary anemias. Take, for instance, an infant fifteen months old suffering from so-called alimentary anemia, or in a slow and tedious convalescence from severe colitis, or a pyelitis or empyema, with poor appetite and feeble digestion, a transfusion of moderate size given every five to eight days will be a means of giving the child a start. In the acute septic conditions it has been shown to be of no value, but in the subacute and chronic it is a most valuable procedure as a general measure. In congenital syphilis and in tuberculocis it has failed to do what might be expected of it. In severe malnutrition or decomposition it is of little good.

In primary anemias its benefits are temporary only. In pernicious anemia, a condition most rare in childhood, it probably prolongs life and makes the patient more comfortable, but does not cure no matter how much or how often given. In leukemia it is not to be used. In pseudolukemia, aplastic or von Jaksch's anemia (and who knows the difference?), it is said to be useful,

though by no means a specific. In hemorrhagic purpura it is about the only thing we can do, and doubtless has saved many lives. It furnishes platelets, checks hemorrhage and supplies blood for that lost, but in many cases its end results are disappointing.

As I have said, the average man today is afraid of this measure, and we must admit that there is some ground for fear. We have been told by good authorities that there is no danger in transfusion if the donor's and the recipient's blood is of a common type; that there are four types, and that it is comparatively easy to determine these by simply comparing the two bloods with types two and three. It is to be recalled that Type 1 is where there are no agglutinins; that Type 2 is where agglutinin A is present; Type 3 where agglutinin B is present; and Type 4 when both are present. (Types 1 and 4 are not specified as the same by all authors.) But it is now known that bloods of a common type, as just given, are sometimes incompatible, and some fatal consequences have resulted, for it has been proven that besides agglutinins there are hemolysins. Further, the freshness of blood is apparently of considerable importance; e. g., blood drawn from an animal and reinjected after a certain time, has caused trouble, whereas if reinjected promptly and in the same way it acts satisfactorily.

Just what is the cause of the so-called transfusion chill or reaction does not seem to be known. It does not always occur, though in most cases it does—a chill or chilliness with rise of temperature and pulse, occuring almost always within half an hour and subsiding in three or four, though the reaction has been known to come on eighteen hours after. Interesting, but I have been able to find no attempted explanation. It seems to be generally felt that reactions are more common and more severe after the use of citrated blood, although the introducer of this method, Lewishon, denies this very emphatically. Further, it is found that reactions are more common in certain conditions and rather rare in others. They are most common when used in primary anemias and most uncommon when used after profuse hemorrhage. Then the larger amount injected, the more frequent are reactions. But simple reactions are not to be feared, but rather hemolysis or agglutination.

The technique seems to be the second stumbling block, and to one who does not do it quite frequently it is a rather tedious little operation. It seems agreed that direct transfusion with uncitrated blood is, all things considered, the methed of preference, but it certainly is the most difficult. In pediatrics, and especially in small children and infants (and these are the patients in which it is most frequently indicated), the job of getting into a vein is a difficult one. Getting into the longitudinal sinus is simple, but is injecting large amounts of fluid here safe? Experience has taught it is not. In using uncitrated blood two or three glass syringes are used, a small amount of blood is withdrawn, the syringe fitted to the needle that is in the sinus and the blood in-

jected. The *frequent connecting* and *disconnecting* of the syringe is *very apt* to get the needle point *out* of the vein. This can usually be prevented by attaching a small rubber tube to the needle in the sinus and letting it be the duty of one nurse to see that the needle does not move in the least after it has been introduced, and let it be the duty of another nurse to see that the child's head does not move. If the fontanel is closed it is probably better to cut down on a vein with novocain and tie the needle in, but this is not an easy thing to do in a child of this age and often fails in the hands of a most skilful surgeon. It is almost impossible to hold one of this age perfectly still, and it is very difficult to do it if they are not still. A general anesthetic is rarely justifiable if a transfusion is truly indicated. Then promptness and a smooth running team is essential, for blood sometimes seems to clot almost as soon as it is drawn.

Injecting uncitrated blood under the skin or into muscle, a very popular method for some years in infancy, has been proven relatively worthless, for the blood clots almost immediately and hence is absorbed very slowly. With citrated blood results are almost equally disappointing. In a series of experiments with this method there was no sign of an increase either in hemoglobin or in the number of erythrocytes in a single case. Recently a man in Minneapolis has been experimenting with a new methed that I believe is going to prove an extremely useful one in pediatrics—that is, the injection of citrated blood into the peritoneal cavity. He has proven conclusively that by this method the corpuscles begin to enter the circulation in a functioning condition in about 15 minutes after the injection is begun; that large amounts are taken into the circulation quickly though not suddenly, as when put in a vein; that untoward results are not as common as when the blood is put in a vein, though it is absorbed quickly enough to sometimes cause a reaction; and in an unchanged condition, for the blood always has to be typed. I believe this is going to be the means of using transfusion quite frequently in children, just as it should be, although in emergencies direct transfusion is preferable.

This leaves us with typing as the only thing that one might balk at—but that need not hinder any one if he will use the following safe and easy method. When bloods are mixed that are incompatible the serum of the recipient agglutinates or hemolyzes the red cells of the transfused blood, not uncommonly producing death very quickly. So we take two loopfuls of the recipient's serum and one loopful of the donor's blood, or better, possibly, add four drops of the donor's blood to 1 c. c. of 1% sodium citrate. A drop of this is added to a drop of the recipient's serum. Agglutination will be apparent macroscopically (though to be sure it should be examined under miscroscope) at the end of 30 minutes. Another author recommends grouping, then comparing biologically, and irrespective of results injecting the first 10 or 20 c. c. and waiting a few minutes before giving any more.

Of course, bloods are always to be tested before each and every transfusion, as not unusually the type is changed or modified by a previous transfusion. It is also known that the administration of certain drugs or an anesthetic may bring about some change of the type.

The amount to transfuse has been worked out by careful experimentation. It is estimated that 15 c. c. of blood to each kilogram of weight will run the red cell count up around a million, so that one can easily calculate approximately the proper dose.

Symptoms of overtransfusion are cough, increased respiration, quick thready pulse, etc. A cough should always be heeded, for it is very easy to overtransfuse an infant.

DISCUSSION

Dr. J. Buren Sidbury, Wilmington:

I quite agree with Dr. Harrison in that an anesthetic is unnecessary for transfusion. I have transfused about a hundred and twenty-five babies in the last several years, and have never yet given anything but novocain.

I think you will be surprised to learn the size of the basilic vein, even in an infant. I take issue with the man who wrote that article from the University of Iowa, in which he advocated cutting down on an internal jugular vein, when you can get a vein in the arm or a popliteal vein. Certainly it would be unsuitable, especially in a girl, to have the scar.

I feel that direct transfusion is not quite so hard as it has been pictured, not quite so difficult, because it is easy to get the vein, and with the smaller needle I feel practically sure that in babies of normal size you can get the needle into the vein.

I remember that up to three years ago I was working on the hypothesis that every mother's blood was compatible with her baby's and I guess it was only by the grace of God that I did not get into trouble. Last year I had a case of pyloric stenosis operated upon, and the baby had secondary hemorrhage from the abdominal wall, and was moribund. I did agglutination tests upon the mother, and grandmother, and the blood agglutinated the baby's cells. The father's blood was compatible in that case. I think every transfusion should be preceded by an agglutination test. It is not a hard thing to do. I think the reactions in transfusions are in direct proportion to how well the bloods have been tested for agglutination and hemolysis. I think the degree of reaction following the transfusion depends upon the carefulness with which the typing of the two bloods has been done. The more carefully it is done, the less likely the reaction.

Dr. J. E. Kerr, Winston-Salem:

I think it is very important that we consider transfusion more and more. Personally I do not do it, but I have visited Dr. Stetson's clinic at Bellevue. If any of the doctors present are passing

through New York or going there for special work I would advise them to go in and see him do transfusion. After hearing Dr. Sidbury this afternoon, I am in hopes that we can go to Wilmington soon and learn as much as in New York. He is the type of North Carolina doctor that I like to see. Dr. Stetson does that work for the different hospitals in New York, and he does it in such splendid fashion that it will make any one think he can become expert in transfusion.

Dr. Harrison, closing the discussion:

About the anesthetic, possibly Dr. Sidbury misunderstood me. I said I did not think an anesthetic should be used if a transfusion is truly indicated. I do not think an anesthetic is proper in a child that really needs transfusion.

About the reaction, I would like to ask Dr. Sidbury if he feels that if bloods are properly typed, do they not sometimes cause reactions, too?

Dr. Sidbury: Sometimes, yes.

SHOULD FEVER BE TREATED?

J. LaBruce Ward, M.D., Asheville

In attempting to answer this question, the writer lays no claim to having thrown salt on the tail of a new idea, but, as Seneca well says: "We know many things but we do not think of them, so that it is the part of a monitor not so much to teach as to mind us of our duties." The writer, therefore, craves your indulgence while he reminds you of facts which, perchance, are stored in the dustbin of oblivion. What follows is particularly applicable to the infant "mewling and puking in the nurses arms", rather than to "the whining boy with shining morning face, who creeps like snail unwilling to school".

NORMAL TEMPERATURE

What is the body temperature of the normal human being? Although the first thermometric determination upon man was made three centuries ago, there is not yet unanimity of opinion as to what constitutes a normal temperature in various parts of the body. Burton-Opitz expresses the consensus of opinion when placing the average temperature of the blood traversing internal channels at 102.2° to 104° F.; that of the rectum at 99.1°; that of the mouth, at 98.7°; and that of the axilla, at 98.4°. Certain factors, as age, sex, time of day, meals, exercise, season and clothing, alter these values. The method of taking the temperature is by no means unimportant. During infancy and childhood, the rectum only should be used, the mouth temperature being impossible to obtain and that of the axilla or of the groin being unreliable, as it does not bear a constant ratio to the rectal temperature of the same individual. It is common knowledge that the

temperature of the young is profoundly influenced by trivial factors. Holt cites the case of an infant whose temperature was raised to 107 by the proximity of hot water bottles. Also, it must be borne in mind that the average rectal temperature of the normal child is higher than that of the adult. Vierordt places this excess at .5°. At birth the rectal temperature is about 100.4°; it falls 3° within an hour and within 24 hours has risen to 99.7°. Jundell, after an examination of 3000 records, concludes that the daily temperature fluctuations in early infancy are from .4 to .9 of one degree, while in early childhood they reach 1.8°; somewhat greater than those in adults. Thus we see that in early life the temperature is higher and the range greater. Of importance is the observation of Demme, that in normal children the axillary temperature is .5° to 1.6° less than the rectal and, in sick children, .5° to 2° less. Holt states that under normal conditions the rectal temperature of infants varies between 98° and 99.5° and occasionally the range may be from 97.5° to 100.5°. Dunn places the normal temperature during infancy and early childhood at 98.5° to 100°, It follows, therefore, that in infancy and early childhood, our little patients cannot be said to have fever unless the maximum rectal temperature exceeds 99.5°, or even 100°. Having set a peg to mark the average (and we must realize that is is only an average) temperature of the normal infant and young child, let us pass to the more interesting subject, the factors involved in causing fever. McCallum aptly defines fever as a "complex response through which, by certain changes in the heat-regulating mechanism, the temperature of the body is raised, chiefly through the *saving of heat.* This reaction is controlled by the nervous system, more particularly by the vasomotor mechanism. It is not the result of an excessive heat-generation (though this is increased), but is an *undue retention of the heart generated.* Thus, according to Krauss and others, the heat production during fever is increased 25 to 50 per cent. The loss of heat is also increased, but this heat dissipation is proportionately less than in health, so that we have a *positive heat balance* which we call fever. The onset of this may be gradual or abrupt, with a chill. It may be constant, intermittent or remittent, and may disappear suddenly or gradually. According to Barr and other investigators, the velocity of the chemical reactions increases 2 or 3 times if the temperature is raised 5°; that is, whenever the temperature rises from 99° to 104°, there occurs a 20 to 30 per cent increase in chemical reactions. This results from the oxidation of proteins, hence the necessity of supplying ample nitrogenous food so as to spare the destruction of body proteins. This teaches the important lesson that body temperature may of itself markedly accelerate numerous cellular activities. That this overplus of energy generated in the human machine is merely a coincidence, rather than a beneficent provision for protecting the mechanism, no thinking man will hold. All of us can recall numerous patients who, following some acute illness, were in better health than ever before. This may not be explained solely by the formation of specific antibodies. It is not

more logical to conclude that the reaction participated in by the blood-cells, plasma, the tissue fluids and cells has so augmented the body forces that, whereas they were formerly untrained and capable of only feeble resistance and desultory attack upon the invading organisms, now they are well trained and equipped to respond instanter in an emergency? As Liebermeister points out, the regulating mechanism in disease is altered to react for a different standard of body temperature. This mechanism is found in the cutaneous vasomotor apparatus, the secretory activities of the sweat glands, respiration and the act of shivering. While in fever the actual increase in heat production is far less than that caused by muscular exercise, in the latter instance the heat is rapidly lost through increased respiration, sweating, etc. (Despite the fact that we can now accurately determine the total metabolism by measuring heat losses with the caloritimer and by chemical analysis of the products eliminated in the expired air and in the urine; the exact nature of those complex chemical and cellular activities, whose outward and visible sign is fever, are still in a category with the Einstein theory of relativity).

Is fever harmful? In order that we may "see without confusion, clearly", let us not forget that fever is only a symptom, as is cough, pain or hypertension. There are few diseases which do not have elevation of temperature as a part of their symptom-complex, in many instances the curve being so characteristic as to strongly suggest the underlying condition, i. e., malarial fever, typhoid fever and early pulmonary tuberculosis. We must consider fever one of the body reactions against infection, although it may occur in the absence of infection as, for instance, in sunstroke and acute starvation of the newborn. Nature seldom does things without reason and, while reparative processes may themselves occasionally be detrimental to normal function, we must say, with Rabbi Ben Ezra, "Perfect I call thy plan". Do we not often run counter to Nature's plan and like fools rush in where angels fear to tread, when there is not one iota of evidence to suggest that our method holds promise of success?. The father of medicine, five centuries B. C. (with that marvelous prescience which characterized so many of his observations), held that the temperature elevation occuring in most acute infectious diseases is, within limits, *remedial in purpose and effect.* Can the correctness of this be seriously questioned today? It has been demonstrated that when animals are kept at a high temperature their defense against infection and intoxication is more effective than that of animals not so treated. The heated animals lived longer than the controls and many survived doses of bacteria to which the latter quickly succumbed. Also, it has been shown that phagocytosis has been increased by fever as high as 105°, and that agglutinins and bacteriolytic substances were produced in greater amounts and more quickly than in the control animals. (The streptococcus of erysipelas does not develop at 104°, and even the bacillus of anthrax is greatly attenuated at 107°). To pursue our theme further, let

us pass to a consideration of some of the conditions in which the temperature of the body is elevated. While the degree of elevation furnishes a rough index as to the reaction on the part of the body forces, a high temperature in the infant has not the same significance as in the adult because of the ease with which the infant's heat-regulating mechanism is thrown out of kelter. A child in apparently perfect health may have a considerable elevation of temperature, not only for days but for weeks, much to the bewilderment of the physician but without ill effect to the patient. A high fever of short duration and without explanatory sign or symptom is not uncommon. (Such a case was Baby T., nine weeks old, breast-fed and thriving. One morning the infant seemed fretful and the thermometer registered 104°. When the little patient was admitted to the hospital, a few hours later, the temperature was 105°. A careful physical examination, with examination of urine and feces and a radiogram of the chest, revealed nothing abnormal. There was no gastro-enteric disturbance. Within 36 hours the temperature was normal.) Even when there is a common cause, the temperature range varies much in different individuals. Two children, of the same age and weight, are ill with croupous pneumonia, one running a temperature of 105° but without untoward symptoms; the other, with a temperature of but 103° shows marked nervous manifestations and extreme prostration. Had these occurred in the first case, the fever would, doubtless, have been held responsible and a vigorous attack forthwith made upon it. It is just as illogical to expect to remedy the underlying cause of fever by using drugs as to cure pleurisy by relieving pain or benefit a nephritis by reducing the compensatory hypertension. Nor do we expect to favorably influence a pulmonary lesion by checking the cough which is a symptom of it. When pain or cough unduly disturbs the patient it is advisable to afford relief, not because this will influence the pathology but because the general condition of the patient is improved by allowing him rest and thus increasing his fighting power. By the same token, then, it may be advisable to modify the fever curve when—and only when—we have satisfied ourselves that this will redound to the advantage of our patient, whose comfort and safety is our object. This, and not the height of the mercury column, the importunities of the anxious mother, nor the garrulous gabble of the neighborhood granny, should ever be our guiding star. When it is recalled that the height and duration of fever varies not only with the nature of the disease and severity of the infection but, more particularly, with the age and nervous make-up of the patient, the futility of attempting to reduce it when is reaches a certain point will be obvious. To speculate on the reason for the characteristic febrile reactions in typhoid fever, malarial fever and other diseases is intensely interesting. This much we know: the body is provided with a complex reflex mechanism by means of which the body heat may be promptly increased. Sometimes, hyperpyrexia results, and it is possible that this excess of heat may itself be harmful by entailing injury to the cell protoplasm. If, however, we con-

sider all of the signs and symptoms in a certain disease and visualize the pathology, we shall not often be convinced that even high fever is harmful. We are aware that an infant with extreme febrile reaction is prone to have convulsions and that when he comes of neurotic parentage this susceptibility is increased. Does this prove that the hyperpyrexia stands in casual relationship to the convulsions? By no means. Then why do the convulsions usually cease when the temperature drops? Probably because the measures employed to control the convulsions—the hot bath, chloral, bromides—acting as nerve sedatives, thus afford relief, the fall in temperature being merely incidental. If we can determine the cause of fever—and this emphasizes the great importance of an early diagnosis—we can act more intelligently in deciding whether, and when, it is necessary to begin our therapeutic interference. To put it differently, we should be mindful of the temperature range peculiar to the disease which we are treating. We have a child four years of age, with lobar pneumonia. The temperature is running between 103° and 105°; that is, the febrile reaction which we expect to find *in this disease.* Inferentially, then, it is the degree of heat in which the body forces work to best advantage in *this disease.* There is no medical agent which will shorten the course of the disease or lower the mortality. It will probably terminate favorably in less than ten days. Many cases recover when the mercury has climbed to 107°. If the fever continues beyond the tenth day the outlook is less hopeful because it indicates a complication, and this, antipyretics would not have prevented. Suppose that on the third day of the disease there is extreme nervousness. A bath at 95° may reduce the temperature but one degree, yet, through quieting the nervous system, it will improve the general condition of the patient. Even when the fever is not excessive, we should beware of nervous symptoms in young infants and those of neurotic stock. In other words, we cannot lay down any rule and say that when the temperature reaches a certain point it should be reduced and before that time it should not. Here, then, is the answer to our question: fever should never be treated, but the *patient with fever* may sometimes be benefited if the temperature does not exceed certain limits, but these limits are not to be arbitrarily established and will vary with the condition of the child and the disease from which he suffers. In gastro-enteritis, convulsions are prone to occur when the temperature is unduly high, whereas we need have little fear of them in pyelitis. When our attention is centered on the fever rather than on making a correct diagnosis, appropriate treatment is neglected. How are we to determine what degree of fever the patient is entitled to? Than answering this, there is nothing in the practice of the healing art requiring a nicer discretion or a more judicial attitude. These will be gained neither from the textbook nor the test-tube, but come only through close application in the rough school of experience, untiring observation of clinical cases, and drawing from these logical deductions. Having decided that it will benefit our patient to lower the temperature, please

remember that treatment is not synonymous with drugging. There are, outside of the pharmacopeia, remedial agents worth more to the human machine than most of the medicinal remedies with which its pages are cluttered. So early as the fifth century B. C., Hippocrates insisted that the individual rather than the disease be considered and, above all, that no measure be used which might harm the patient. His teachings were in striking contrast to those of the empiric school which arose in Alexandria during the third century. Anatomy, physiology and pathology were neglected, with a resultant increase in the number of remedies without improving treatment. Is it not true today, as in those early times, that the less thought we devote to physiology and pathology, the more apt we are to prescribe drugs? (Evidently the practice against which Hippocrates inveighed was common almost two centuries later, for we find Paracelsus, in 1500, launching abuse and invective against the profession for their absurd concoctions. Would that someone could now wield his trenchant pen!) Sydenham is considered the founder of modern clinical medicine. Although an empiricist, he adopted the best teachings of Hippocratic medicine, stressed careful history-taking, treatment founded on experience, and the need for specifics. How much progress have we made in drug treatment since the days of Hippocrates, Galen, Celcus and Syndenham? The wonderful strides which preventive medicine has made is just cause for pride. To produce a Jenner, Pasteur, Behring or a Wright requires centuries. Surgery may lay claim to numerous triumphs in the relief of suffering and in the lowering of mortality. Medical therapy can boast no such progress in the past two centuries. The size of the pharmacopeia and the number of prescriptions written bear testimony that we have failed to learn the limited place which drugs deserve to occupy in therapy. Rational treatment is the most difficult part of medicine because so much of it remains empirical. Perhaps one-fourth of the diseases which we treat are due to causes beyond our ken. The diseases for which we use specifics may be counted on the fingers of one hand. Hippocrates was, doubtless, as successful with the drug treatment of pneumonia and cancer as we are today. That millennial period of which Tennyson writes: "All diseases quenched by science, no man halt or deaf or blind; Stronger ever born of weaker, lustier body, larger mind"., is yet far distant. Certainly, we should treat the patient, using specifics, when possible, and appropriate therapy *which has proven its value* in curing disease or even in alleviating symptoms, provided the latter are detrimental. That shrewd observer, Benjamin Franklin, was not far from the truth when he said, "He is the best doctor who knows the worthlessness of the most medicines." However, it is incumbent upon us to know thoroughly the action of the few great drugs, such as opium, quinin, mercury, arsenic and the iodides. As has been indicated, empirical therapy is often necessary. By this is meant therapy based on long clinical experience, when the cause of the disease and the method of the drug action are yet obscure. Such empiricism is responsible for the specific treat-

ment of malaria since 1640, while its rationale was not demonstrated until two centuries later. Such empiricism resulted in the use of mercury in treating syphilis in the sixteenth century, while the treponema was, until recently, unknown. Such empiricism has taught us to relieve the gouty by using colchicum; the sufferer from rheumatic fever, by using salicylates; and the patient with a decompensating heart, by using digitalis. Such empiricism is born of long clinical experience; the evidence in its favor is incontrovertible. When the patient recovers after taking our medicine, to apply the *post hoc, ergo, propter hoc,* reasoning is to "assume a virtue when we have it not." In the practice of the healing art there is no place for blind faith in drugs nor yet for medical nihilism. That illustrious clinician, Osler, when upbraided as a therapeutic nihilist, replied, "I bore this reproach cheerfully, knowing as I did that it came from men who did not appreciate the difference between the giving of medicine and the treatment of disease". The "shotgun prescription" excites amusement, but is it any less rational than administering proprietory preparations upon the absurd claims of some pharmaceutical house whose ignorance is surpassed only by its cupidity?

If we decide to lower the temperature, two methods are open to us: drugging and hydrotherapy. If one has faith in diuretics and diaphoretics, nitre and potassium citrate may be used and are safe. The salicylates may be used but should be combined with sodium bicarbonate, lest they cause vomiting. The coal-tar derivitives are more dependable but not without danger, as they diminish the excretion of urea (and probably other waste products), inhibit the activity of the protoplasm and destroy the red blood corpuscles. If you see fit to write a prescription merely to appease the mother, let it be for some inert substance. But the most neglected as well as the most valuable therapeutic measure at our disposal is hydrotherapy. All of us are aware of the benefit of the ice-bag, hot-water bottle, enema, douche, gastric lavage, Murphy drip, and subcutaneous and intravenous injections. No claim is made that hydrotherapy can supersede or supplant the few really useful drugs, but, when its rationale and proper application are understood, it can be made to serve as diuretic, diaphoretic, tonic, sedative and antipyretic. One of its most valuable, and least understood, actions is toning up the nervous system and thus stimulating metabolic activity and excretion of waste products. This action and not the reduction of temperature is what reduced the mortality of typhoid fever at least twenty per cent; a result which drugs had been powerless to achieve. The use of drugs merely enabled our patients "to die with a normal temperature". Welch, after an exhaustive review of experimental and clinical data, concludes that failure of heart power is less an effect of high temperature than of other concomitant conditions. A remedy of such potency as water is, of course, capable of harm and has its contraindications; therefore, a thorough knowledge of how and when to use it is a prerequisite to success. For its antipyretic effect

water should be used at 95° as sponge bath, tub bath or sheet bath, its duration depending upon the age and condition of the patient. Infants bear cold badly and much mischief may be done thereby. In fevers water internally is more necessary than food and the minimun quantity permissible should be prescribed at stated intervals.

Permit me to close with the following admonitions:

The child with fever needs a diagnosis.

Within certain limits fever is a protective reaction.

If you are certain that hyperpyrexia is harming the patient, use hydrotherapy. If this is impossible or fails—it seldom will—then only is the use of drugs justified.

Keep the bowels and the windows open and use an abundance of water internally, externally and eternally.

DISCUSSION

Dr. L. W. Elias, Asheville:

I shall make the same remark that I made the first time I heard this paper, that it is a very sensible paper, and calls our attention to some of our weaknesses and to some of the things in which we can improve our practice. The mother calls the doctor to the baby for fever. As long as the baby just cries and is a little upset, she takes a chance with it, but when the baby has fever she calls the doctor, and just simply the fact that the baby has fever leads us often to prescribe for it. The mother gets panicky and feels that we are not doing anything unless we prescribe for the fever, so we go ahead and treat, often without having the slightest idea what is the matter. The doctor in the older day was easy in conscience, because his knowledge of pathology was limited, and he called everything typhoid fever, and that gave him a chance to go along and find out what was the matter, because every one knew that typhoid was a long disease. When he discovered the baby had pneumonia, he said it had gone into pneumonia. Dr. Ward has sounded a very important note in telling us to treat the patient and not the temperature, and to find out what the matter is. The temperature is, frequently an aid and not a detriment.

EYE, EAR, NOSE AND THROAT

Chairman: Joseph B. Greene, M.D., Asheville

ACUTE OTITIS MEDIA IN CHILDREN

(Chairman's Address)

The fact that acute inflamation of the middle ear in children is one of the most frequent conditions, and likewise the most serious, that the specialist in our branch of medicine is called upon to treat is my reason for presenting this subject to you today. The condition is serious not only for the reason that its complications endanger life, but also from the fact that the valuable sense of hearing may be impaired or entirely lost. The middle ear and the adjacent tissues, particularly the eustachian tube, in infancy and childhood have certain anatomical differences from those of the adult, which have a distinct bearing on the course of the disease, so that it seems desirable to direct your attention briefly to these structural peculiarities.

In the first place, the eustachian tube in a young child is short and relatively large. Its direction from the nasopharyngeal orifice is almost horizontal, differing in this respect from that of the adult, which has an oblique course upwards. It is also thought that the tube in a child is the more patulous. It can be readily seen with what ease microorganisms gain entrance to the middle ear from infections of the upper respiratory tract. The drum-membrane in a child is more horizontal, and is thought to be thicker than that of an adult. The difference in thickness, and also the shorter and more open tube, which affords at times partial drainage of the middle ear, would explain the occasional delay in spontaneous rupture of the drum-membrane in children. The middle ear in the young is said to contain certain remnants of embryonic tissue, a factor which lowers its resistance to infection.

It is well to bear in mind the possible presence of a defect or dehiscence in the petrosquamosal suture situated in the tegmen tympani. The absence of bony structure at times in this region makes easy the occasional early extension of infection from the middle ear to the cranial cavity, causing meningitis. The antrum is present at birth and is of considerable size, though situated on a much higher level than in the adult. The outer wall of the antrum is thin and the bone is of soft structure, which explains the frequent development of the subperiosteal abscess in this region. The mastoid cells are not a factor to be considered until about the end of the second year of childhood. The antrum, however, which is merely an extension of the middle ear, may require opening and drainage.

It can not be questioned that the presence of adenoids and diseased tonsils is a causative factor in producing acute inflammation of the middle ear in children. This lymphoid tissue acts harmfully, not only in harboring infection, but in preventing ventilation and drainage of the middle ear. I can not agree with a well known aurist who regards large adenoids as a protection against infection of the middle ear by closing the mouth of the eustachian tube. I am firmly convinced that children who have been successfully rid of their tonsils and adenoids are less liable to acute middle ear inflammation. Children are also susceptible to the acute infectious diseases, particularly scarlet fever, measles and diphtheria, which makes them liable to attacks of acute otitis media. Acute rhinitis, or what is so often termed "cold in the head," is a frequent cause of middle ear inflammation. Acute intestinal diseases, so often encountered in the spring and summer, are frequently complicated with middle ear disease. Anemic and undernourished children have a lowered resistance to the invading organism. The nasal douche in the hands of the inexperienced can easily drive infection into the middle ear, and it is only in exceptional cases that its use is justified. The swimming pool is another fruitful source of the middle ear infections, and will continue as a causative factor as the popularity of water sports increase, for the possibility of keeping a common swimming pool sanitary has not yet been attained. The organisms concerned in acute otitis media are varied, and frequently there is a mixed infection. Though the course of the disease and the severity of the attack can not be accurately determined from the type of the organism present, yet we are accustomed to anticipate a rather severe attack in the presence of streptococci and pneumococci. This is particularly the case when the middle ear inflammation is associated with measles or scarlet fever. There are cases, however, where patient's resistance is low, in which the less virulent organisms, as the staphylococcus, may set up a very severe inflammatory condition. So we can not with certainty predict the course of middle ear disease from the type of the invading organism.

It is unfortunate that the classification of the acute middle ear diseases is a bit hazy. There does not seem to be, for instance, in the early stages, a clinical distinction between acute catarrhal otitis media and the acute suppurative form of the disease. Of course, when the discharge is distinctly purulent, the differentiation becomes plain enough. I am of the opinion that the purulent type of the disease in the early stages is usually of the simple, or catarrhal, form. Kerrison, in his excellent work, makes his classification from the anatomical situation of the inflammation. If the exudate is located in the atrium alone, he calls it catarrhal, or simple; if in the vault, as well as the atrium, he designates it purulent otitis media. For me, it has been frequently difficult from otoscopic findings to determine with accuracy the site of the exudate. In discussing with you the symptoms and likewise the treatment of this condition, I shall not attempt to distinguish

sharply the two types of the diseases, except to say that an attack which sets in with mild symptoms, particularly with reference to the temperature, we are likely to regard as a simple or catarrhal type. When the symptoms are more severe, and the discharge soon becomes purulent, we call it suppurative otitis media. A case may begin as a catarrhal type and later assume a suppurative form. There is usually present a triple symptom-complex: temperature, pain and defective hearing. In infants and young children the hearing function can not readily be determined, and the evidence of pain is not always elicited. Previous to the fourth month in infancy the motor response to sensations being hardly developed, we seldom have movements of the hand to the affected ear, as we have in later months of infancy and childhood. Temperature then becomes by far the most important symptom of the disease, and very rarely is it absent. The temperature is of the continuous type, and the afternoon rise may be as high as 104 or 105°. The pulse rate is greatly increased. Extreme restlessness as evidenced by rolling and tossing in bed, is a symptom of considerable value. Convulsions may occur, due not only to the general toxemia, but to the close relationship between the middle ear and the brain cavity. It is in infants and young children that the appearance of the drum membrane assumes the greatest importance. In the early stage of the disease there is only slight redness of the drum membrane, this is particularly evident in the region of the long process of the malleus, or it may be confined to Shrapnell's membrane. In a later stage of the disease we observe marked redness and swelling of the tympanic membrane, with obliteration of the landmarks. A more advanced stage of the inflammatory condition is evidenced by bulging, particularly in the posterosuperior quadrant, though it may be in other portions of the membrane. Vesicles are at times seen, especially in inflammatory conditions associated with influenza.

From what has been said, it would hardly seem necessary to repeat that in the young the otoscopic findings are of the first importance. In certain cases the differential diagnosis between acute middle ear disease and furunculosis of the canal offers some diffculties. A very slight rise of temperature or its entire absence would speak in favor of furunculosis. There is usually marked pain and tenderness on moving the cartilage of the ear. Inspection of the ear canal should reveal some swelling. In older children it will be noted that the hearing function is not disturbed, the test being made while the canal wall is held open with a speculum. However, we may have a suppurative otitis media complicated with furunculosis of the canal wall, a very difficult condition to confront us. The most frequent complication of acute otitis media is mastoiditis, which in infancy till the end of the second year of life means a necrosis of the antral wall. On account of the slight bony protection of the brain cavity, meningitis is a fairly frequent complication. Sinus thrombosis may occur, evidenced by great exacerbation of temperature, and often there is a positive blood

culture. Distinct chills, so frequently observed in older children and adults, are a less frequent symptom in the very young. Acute inflammation of the labyrinth may be present, though, fortunately, this is not a frequent complication. On account of the slight protection of the facial nerve in the bony canal, there may be paralysis of the facial muscles; usually, however, this is of short duration. Extradural abcesses and brain abcesses may complicate a suppurative otitis media, though rarely in the acute stage of illness.

As preventive medicine is so much the order of the day, we, as otologists, have a special duty we owe our patients and the public, to teach them how best to prevent middle ear disease and its occasional resulting deafness. There is hardly a question that the presence of diseased tonsils and adenoids plays a very important role in the cause of the condition now under consideration. The acute infectious diseases, particularly scarlet fever, measles and diphtheria, run a milder course and the ear complications are less frequent, when the tonsils and adenoids have been successfully removed. The writer on one occasion removed the adenoids of a child who had been freshly exposed to measles, with the hope of lessening the danger of the complicating middle ear disease. This child whose adenoids were removed came down with measles at the expected time, and went through the course of the disease without the slightest symptom of middle ear involvement. In my opinion this preventive measure should be more frequently considered under such circumstances. Children suffering from head colds, particularly if fever be present, should be put to bed and the nose given appropriate treatment. They should be taught not to blow their noses too violently, and then closing only one nostril at a time. The possible danger of the nasal douche, which has previously been referred to, should be taught our patients and its use permitted only in exceptional instances. The swimming pool in our large cities is becoming a greater menace, and certainly those who are susceptible to middle ear disease should abstain from swimming. It is very important that children with a perforated ear drum, though it be entirely dry, should stay out of the water. Children suffering from acute infectious diseases should have their mouths kept as clean and aseptic as possible, and the associated nasal condition given proper treatment. The ear drum should be examined daily as a routine. For this we must rely upon the pediatrician and the general practitioner.

In reference to the treatment of acute otitis media, at the first appearance of symptoms our patients should be put to bed in a cool and well ventilated room, both extremes of temperature, if possible, being avoided. It is with some hesitation that I speak of such a well recognized form of treatment as purgation, for practically every writer whom I have consulted urges this as a first and essential consideration. In my opinion, however, it is of the least important, or, in fact, of no importance whatever. Should the child by chance be constipated, a laxative, or what is often quicker and better, an enema, may be prescribed. You

recall that up to a few years ago we were urged to use purgatives as a preparatory measure for operations under general anesthesia, but we have now learned that our patients do better without this needless medication. It would seem that we hold fast to traditions in medicine. Our patients should be given light and easily digested food and *plenty of water to drink.* It has seemed to me that the importance of drinking plenty of water has not been sufficiently emphasized. On account of the close association of the middle ear and the eustachian tube, through the nose and nasopharynx, this region should receive treatment, with the idea of opening the nasal cavities and affording ventilation and drainage of the tube and middle ear. For this purpose a few drops of a weak solution of epinephrin to the nose may be prescribed, though I am in the habit of using drops of iodin, menthol and camphor, each one-half to one grain to the ounce of hydrocarbon oil. Ten to twenty per cent argyrol has been recommended. It has always seemed to me that drops instilled in the nose are far preferable to the use of an atomizer. For earache, in the early stage of the disease, warm carbolized glycerine dropped in the ear canal is very grateful. It has the added advantage of placing the drum and the ear canal in a more aseptic condition, in case paracentesis should later be required. For the pain and restlessness, small doses of paregoric or aspirin are often useful. Application of heat in the form of a hot water bag to the affected ear adds greatly to the comfort of the patient. Should evidence of pain persist, particllarly when associated with a rise of temperature, incision of the tympanic membrane should be seriously considered. The indications for paracentesis become positive when the symptoms of pain and high temperature are associated with a red and swollen drum-membrane. We must bear in mind that there are cases of severe middle ear disease where the drum-membrane shows very slight changes, certainly not the bulging so often described, where a paracentesis is often indicated. Then, again, symptoms of pain and temperature may be slight, particularly in undernourished children, and here we must rely upon the appearance of the drum-membrane as our guide for operative interference. To sum up the situation, I would say that, in determining the necessity for making an incision in the tympanic membrane, we must take into consideration the symptoms, with the clinical history, though our greatest reliance, particularly in very young children, must be placed on the otoscopic findings. If possible, operation should be performed under general anesthesia, nitrous oxide, except in the very young, being preferred. Ether, in my opinion, has the preference over chloroform. There are times when we must operate with the local anesthetic, my preference in such cases being for Politzer's mixture of cocain menthol, and carbolic acid in equal quantities. It seems quite important, before operating, to disinfect the drum-membrane and the ear canal. For this purpose I am in the habit of swabbing the canal with alcohol, which serves the additional purpose of removing epithelial scales and fragments of wax which interfere with a proper view of the drum-membrane. The incision should,

of course, be a long one, the point of election being in the posterior half, the incision extending from the floor to the superior wall. The operation is usually followed by a considerable flow of blood from the canal, which is soon succeeded by a serosanguineous discharge. In the suppurative form this discharge soon becomes purulent, and may continue for several weeks, while in the simple form we may expect a cessation of the discharge within a few days. In case a general anesthetic is administered for the paracentesis, the question of removing the adenoids at the same time is to be considered. I have practiced this on several occasions with uniformly satisfactory results. There would seem to be no objection to this procedure from a surgical standpoint—in fact, it has much to commend it. There might be offered some valid objections to the operation of tonsilectomy during the acute stage of otitis media, which would not apply to the simple operation of adenoid removal. It is my custom immediately after an incision of the drum-membrane to direct that the ear be irrigated every few hours with warm boric acid solution, drying the ear canal as well as possible after the irrigation. This measure facilitates drainage, which is so important, and at the same time supplies heat, which is an aid to resolution. Kerrison strongly advises early irrigation after each incision for the purpose of removing the clot, which tends to prevent the exit of discharge from the middle ear. The frequency of irrigation should diminish as the temperature falls and the discharge lessens. Should the discharge continue for several weeks, in spite of all efforts, we should abandon the irrigation and advise frequent dry swabbing of the ear canal, taking care that all discharges be removed as far back as the drum-membrane. The dry treatment has many strong advocates. It consists in placing a sterile wick of gauze carefully and loosely into the ear canal, taking pains that it reach, if possible, the point of incision of the drum-membrane. This method has never appealed to me, for the reason that one is never sure that it facilitates drainage, particularly when the discharge becomes thick and purulent. Then, again, removal of the wick and its insertion can only be accomplished by the aurist in attendance, except where the patient is in a hospital and under the care of a trained intern.

I would like to emphasize the following points brought out in this paper:

1. The difference in the anatomy of the temporal bone and adjacent structures of infants and children from that of adults.

2. Our duty in urging all measures possible for the prevention of middle ear disease and the importance of instituting prompt and appropriate treatment as soon as symptoms arise.

3. The importance of early incision of the drum-membrane without waiting for all cardinal symptoms and the marked changes in the tympanic membrane, keeping in mind the fact that it is safer to operate a day too early than an hour too late.

DISCUSSION

Dr. J. M. Parrott, Kinston:

I want to discuss that paper, not because I think I have the ability to do so, or that it needs criticism, but it is too good not to be complimented at least. I have seldom heard a better paper before any medical society anywhere. I just want to say that much.

Dr. J. W. MacConnell, Davidson:

I can reiterate what Dr. Parrott has said, and shall not spend more time in complimentary remarks. One of the chief charms of the paper is that it started right in the subject at its inception without going into observations as to anatomy and physiology, which we are supposed to know.

In discussing it, I will ask you if you have tried as a local anesthetic this butyn recommended by the Council of Chemists of the American Medical Association. Personally, I do not like the mixture of carbolic acid and menthol, because it causes the skin to slough too much, but with a watery solution of butyn you can open the ear drum painlessly. In my practice we always have to do this in private homes; of course in the office or hospital you could do better with gas. I use four per cent, but you can use it even stronger.

Dr. J. G. Murphy, Wilmington:

I want to say that it is seldom that we have a subject presented to us so clearly and so well as our Chairman has presented this subject, that has been of such practical value to every one of us. We cannot practice medicine without daily meeting the question that he has brought before us so clearly.

I do want to say one word in defense of the valuable anesthetic so generally used, carbolic acid, menthol and cocain. It does, in some cases, what Dr. MacConnell has said. My experience in that prompted me to hunt something to correct the carbolic acid, and a little alcohol does that. You can open the ear drum of a child or adult painlessly, and it leaves no after effect if you control it with alcohol. You let it remain long enough to get the anesthetic effect, and control the carbolic with alcohol. I have gotten so that I never give gas or anything to open these ear drums. You can open them in a child that resents any examination at all, without pain.

Dr. Greene, closing the discussion:

I do not know that I have anything to say in conclusion except that I apreciate the generous words said about this paper, which is far more than it deserves.

As to butyn it is certainly worth trying. I shall take it up and try it in an early case.

CORNEAL ULCER*

J. G. Johnston, M.D., Charlotte

In taking up this subject I do not hope to have anything new or unusual to bring before you, but only to freshen your minds with a few of the fundamental facts concerning this disease.

An ulcer of the cornea is a loss of substance that extends from its surface into its parenchyma to a varying depth, and is in reality a necrosis of this part of the corneal tissue. The causes are many, varying from a slight abrasion to the clean punched-out ulcer occurring in extremely debilitated patients. Some ulcers appear to have a traumatic origin and later become infected with pathogenic germs, while in others there seems to be evidence that the process started primarily with the invading microorganism.

Three cardinal symptoms are always present in every corneal ulcer—inflamation, degeneration and regeneration—and the predominating one of these determines the extent of destruction of tissue as well as probable length of time that will be required to effect a cure. The cornea is not the only tissue of the eye involved in this inflammation, as in practically every ulcer of the cornea the iris is more or less implicated, accounting for a great deal of the pain found in these cases. Every ulcer has both a progressive and a regressive stage, the progressive being the one in which the ulcer is spreading or getting larger or deeper, and regressive being the one which repair is the most marked thing about the condition, or the healing process.

As to determining whether it is in the progressive or the regressive stage, a careful examination of the cornea will show that in each progressive ulcer the part of the cornea toward which it is traveling shows a more marked grayish or yellowish cast than in other parts. Ulcers spread not only along the surface of the cornea, but may progress in the direction of depth, in which case it destroys one layer of cornea after another until it finally perforates into the anterior chamber. In either case it spreads in the direction in which there is most infiltration with pus cells, consequently in the direction of most grayish tissue in the corneal layers. The diagnosis of corneal ulcer is not difficult to make, as one can always tell on close and careful examination whether you have destruction of tissue or not. The use of fluorescin is a great aid in determining whether an ulcer is active or has been covered over with epithelium, leaving only a flattened place or corneal facet. Other conditions may so overshadow the corneal one that it may be necessary to resort to the use of the corneal microscope to positively settle the question, while we must turn to the microscope in order to determine exactly the infecting microorganism in practically every case.

I have said nothing of the symptoms, as they are too well known to take up your time with them. A few words, however,

*Read by title.

in regard to the complications might not be amiss. First and foremost of these is iritis, and associated with it, in many cases, is hypopyon. Another complication that is often more serious in its results than iritis is perforation of the cornea with a forcing of the iris into the opening, forming an anterior synechia, thus crippling the eye permanently unless relieved. We also have at times healing of the ulcer after it has gone through part of the layers of the cornea, thus weakening it and eventually resulting in staphyloma with all its attendant evils.

The prognosis in these cases is something about which it is true that least said is easiest mended, or you may have some difficulty in explaining to the family why things did not turn out just as you predicted. The great majority of corneal ulcers will heal kindly and promptly leaving very little scar, but occasionally one that, by all the rules of the game, looks as if it should be well in two or three days fails to respond to treatment, and will hang on just about the same or gradually grow worse until you feel that you are ready to quit and say that you know nothing about medicine in general and corneal ulcers in particular.

In regard to the treatment, one of two principles or combinations of them must be relied on. These are sterilization and stimulation. This principle holds true, no matter whether the method of cleaning the ulcer and stopping its progress be one of the chemical antiseptics or the actual cautery. In some cases one of these methods is to be preferred, while in another it seems to be useless and the other must be resorted to. The milder type of ulcer will frequently be stopped in its course by the use of chemical antiseptics. Another type is not benefited at all by them and you must go forward one step and use the actual cautery in some of its forms. The ulcers with excavated edges, in which the superficial layer of the cornea falls or lies over the edges of the ulcer, are the ones that seem to be best adapted to the use of the actual cautery, as with it you can destroy the overlapping edges and lay bare the actual edge of the ulcer for treatment. Recently I have been using superheated air in the treatment of corneal ulcers. This instrument, Shohan's thermophose, is electrically heated and has an opening through the centre through which a stream of air is forced by means of a rubber bulb, being heated to the required temperature in its passage through. By this means the pain is relieved, the dry, hot air sterilizing the ulcer, killing or inhibiting the growth of the infecting organisms, and stimulating cell growth and thereby more rapid healing of the ulcer. This form of treatment may be included either under the head of antisepsis or stimulation, or probably it might be better to say it partakes of the nature of both. Suffice it to say that in a great many cases it is very effective, shortening the time of treatment and lessening the pain in each instance, and I am inclined to believe it lessens the amount of scar tissue and opacity of the cornea. Still one other form of treatment that I am unable to classify is subconjunctival injections. These at times partake of the nature of antisepsis and

again we feel sure that it is by means of stimulation that it accomplishes its work. The medicines injected range all the way from salt solution of varying strength to solutions of mercury. Some of the best results I have ever gotten were from injection of cyanide of mercury, but probably the next patient upon whom this form of treatment was used was first put on salt solution and the result might be just as good. The reaction from the mercury is so much more marked, lasts so much longer, and the pain so much greater that I feel that unless there is some particular reason for using the mercury first we should always begin this form of treatment with salt solution, as the reaction from it is almost nothing and the pain is very slight, making it possible to inject it every other day or every day if necessary, whereas it takes several days for the reaction from the injection of mercury to pass away. However, I should say it has been found in some cases that one injection of mercury did more good than half a dozen of salt solution. The plan of wearing a pad over the affected eye, to prevent the constant movements of the lids, has been found to be very efficacious in many instances, both in relief of pain and in rapidity of repair when the stage of regression has set in. I doubt very much the wisdom of this plan in the violently infected ulcers that require cleansing several times during the day.

I do not know how to classify the Saemisch incision, which gives such brilliant results especially in those serpentine ulcers that spread in an irregular course almost over the whole cornea, yet it is beyond question that good results are almost immediately apparent following this operation.

There is so much that could be said on this subject that one could occupy hours of your time and then hardly mention all of its phases, and my only hope is to bring to your minds and to refresh your memories in regard to things and plans of treatment with which you are already familiar.

DISCUSSION

Dr. V. M. Hicks, Raleigh:

The State Board of Health has asked me to bring before this Section the proposition of holding some eye clinics throughout the State among the school children. Surveys in other sections of the country, not in North Carolina, show a large parcentage of school children suffering from eye diseases and high refractive errors, not taken care of by oculists or optometrists. I held a clinic in Harnett County to find out the condition. As I held it only a month ago I can not give you a complete report, because a sufficient time has not elapsed to know the results. But I saw in six days about 480 children, between 480 and 490. Of that number I prescribed glasses for 263. It was a revelation to me. I did not realize that defects were so common as I found them there. For instance, I found three children that I referred to the School for the Blind, that were considered mental defectives. They had just enough vision to find their way around. There were 35 or 40 cases

of strabismus, numbers of hypermetropia and mixed astigmatism, and a considerable number of amblyopias, without definite cause. It was interesting to note the progress made in the school by the children with defects in vision; you could almost pick them out by the record and progress in school.

I was not preceded in the County by a public health nurse—in fact, I purposely picked out Harnett County because it has no public health officer or nurse. They have a very good superintendent of schools there and a good welfare worker, both of whom cooperated very nicely with this clinic. After the clinic was over I mailed a letter of advice to the parents of each of the children, telling what was found and advising methods of correction.

Of course, the question comes up from the standpoint of the State Board of Health whether we want to do this any further in North Carolina. It seems to me that the responsibility of these children in the schools is ours. We can certainly say that from 20 to 25 per cent of our children in the rural schools are suffering from defects of the eye. If we do not do something, nothing will be done. I wonder what number of children I examined would have been examined if I had not done so, and what number that I examined would be examined in the future by optometrists or oculists. I think the clinic is a very good way of teaching the people to know the difference between the oculist and the optometrist, and the very definite relation between the child's physical make-up, mental development and ocular conditions.

I suggest that we continue this work. I want Dr. Murphy to tell his experience in his clinic. He held the other one, and they were both held by request of the State Board of Health. They were experimental, and that is what we are reporting here now.

Dr. J. G. Murphy, Wilmington:

Dr. Cooper some time ago asked if I would hold a clinic in Bladen County, which adjoins ours of New Hanover. Knowing the geographical condition of Bladen I hardly thought it best, but he had asked me to do so as an experiment and, having a high regard for Dr. Cooper and his work for the school children in our State, I immediately wrote consenting to hold the clinic, but I had my own impression that is was not worth while. Bladen is so situated that is near points where specialists can be secured, Wilmington and Lumberton and other nearby points. They have a very competent health officer, who had for three years been attempting to get the defective children corrected. He had been to the schools and had applied the tests. They have county nurses, and he had supplemented their work, sending cards to the parents advising that certain defects be corrected and also writing letters, but the percentage of the corrections was small. So he had written Dr. Cooper requesting that he give him the privilege of holding a clinic in Bladen. I had the advantage of Dr. Hicks in that I treated only patients who needed attention, those sent in by the Health Officer. For the first two days they were practically all

cases that needed refraction, for which I had to prescribe glasses; I saw about 65 cases a day, and I had to have a good system to do that. I wrote Dr. Cooper that I couldn't undertake it unless we could do it as well as in the office, or practically as well. Of course, we could not carry everything with us, but we had a dark room and illumination and had carried a nurse with us, and there was also one there. We examined a great many every day, 50 to 65. I was surprised to find the number of defects in this County, surrounded by towns where they could have the care of good men.

We took records of all the defects, the tonsils and adenoids, condition of the ears, and also the grade of the child in school. I did get some beyond twenty, though we confined the clinic to the teens. We got one twenty years old that couldn't see across the room, backward in his grade and had never had on glasses. We found a number of strabmismus cases that had repeated grades several times and had never been refracted at all. After holding this clinic I came to feel that the clinic has a very important place in North Carolina. I feel that if any county in North Carolina could hire a competent man to go into it and thereby save its school children, its work will be greatly rewarded by the good that is done. That applies all over the State. I heartily recommend the work from my experience with it.

Upon motion of Dr. J. W. MacConnell, and after discussion by Dr. H. H. Briggs, Dr. J. M. Parrott and others, the Section declared in favor of putting the eye clinics upon the same plane with the nose and throat clinics, the Chairman of the Section to appoint a committee of five to work out plans for conducting the eye clinics and to make recommendations to the State Board of Health.

Committee: Dr. J. W. MacConnell, Davidson, Chairman; Drs. V. M. Hicks, Raleigh; John B. Wright, Raleigh; J. G. Murphy, Wilmington; H. H. Briggs, Asheville.

REPORTS OF COMMITTEES

Committee‡ on relations with the State Board of Health.

No report. The Committee was discharged.

‡Dr. H. H. Briggs, Asheville, Chairman; Dr. C. W. Banner, Greensboro; Dr. J. P. Matheson, Charlotte.

COMMITTEE ON X-RAY THERAPY*

Dr. J. W. MacConnell, Chairman:

As I understood it, the work of our Committee was to investigate the use and effect of the x-ray in tonsil work. This Committee, as a committee, has never assembled at any one time to

*Committee: Dr. J. W. MacConnell, Chairman, Davidson; Dr. John B. Wright, Raleigh; Dr. O. C. Daniels, Goldsboro; Dr. Louis N. West, Raleigh; Dr. W. C. Horton, Raleigh.

discuss it. We have discussed it individually and members of the Committee at different times have discussed it and we have also made it a point, in addition to following the literature, to discuss it with other members of the Section, to ask members what effects they have seen of the x-ray on the tonsils, and also discuss the matter with the x-ray men themselves. The report of the Committee would be rather the experience of different men than a formal report of the exact status of tonsil work at present.

The cases that I have seen individually were not benefited. (You understand that I have seen a limited number of cases.) One case that I saw six or eight weeks ago had taken six or eight treatments in Florida, and I have treated him recently for two attacks of tonsillitis since last November. The patient says that he is no better. I advised him to have his tonsils removed, but I advised him before he took the x-ray treatments. He is a college student.

The other case was a patient who took eight treatments and said that he was worse. He went to Dr. Matheson and had his tonsils removed and now has completely recovered.

I think it is a mistake for the surgeon who does throat work to say that it can not be done. We must approach it with an open mind and we have done so. I had an x-ray man report to us that they have benefited a number of cases. Dr. Lafferty treated a number of cases locally and he tells me that some have been benefited and in others there has been no improvement. I have followed Dr. Witherbee's work. I know him personally. If we can accept *in toto* that the treatment was as satisfactory as Dr. Witherbee reports it in his hands, it would be very valuable.

You are asking me for a committee report and not a personal opinion, and what we gather is that a comparatively few have been benefited and a great many complain that they are worse. That is from the standpoint of the throat surgeon. The x-ray man, however, reports a number of successes, as well as some lesser number unimproved. Your Committee has nothing to report to you of great value for your own guidance.

Dr. H. C. Shirley, Charlotte:

I would like to ask Dr. MacConnell whether he knows if this patient that he saw, who had two acute attacks of tonsilitis after the x-ray, had frequent attacks beforehand? The reason I ask is that I have a patient writing me about attacks and he says that they are more frequent, severer and longer in duration after x-ray therapy than before. As I understand, your patient did not have more tonsilitis after than before?

Dr. MacConnell:

Equally as much. I had him under observation for three years.

Dr. R. G. Buckner, Asheville:

I would like to ask the Committee whether they made inquiry or investigation as to what effect the x-ray has on various infec-

tions in the tonsils,—that is, the bacteria or germ, and if they have made any investigation to see if the x-ray destroys the germs: It seems to me that that would be interesting. Again, the question as to whether there is probably greater frequency of attacks of tonsilitis after the x-ray treatments, it seems to me, would be a very difficult one to answer with the few illustrations under observation. It would be hard to have an opinion that would be worth while, because there are a lot of cases of infected tonsils, where you may have attacks very seldom and then a year or two of frequent attacks, that have never been treated by the x-ray, and the fact that we have seen a few cases that have frequent attacks after the treatment does not justify the inference that it predisposes to that. I should not think so, but of course that is a matter of opinion. There is no reason that I can see why there should be any greater frequency of attacks unless the tissues are lowered in vitality. If the tissues are we may take it, without further observation, that they may be subject to frequent attacks afterwards.

There is one other thing, and that is, if we assume that the x-ray destroys the infection, there may be just such pathology and anatomical formation as predisposes to re-infection, which may occur early or late, and so we have a condition as if never treated. If we accept the statement that it destroyed the germs we may say that it is sterile after exposure to x-ray. You sterilize a cavity of the tooth and how long before it is reinfected? Sterilize the tonsil, and some of the walls between the crypts are sloughed out and how long before re-infection? I think that is what happens. I do not know whether it sterilizes it or not. I do not remember that any one said that it did, or proved it by experimental tests, but if not we might say it is re-infected and you have the same condition as if not used. If it does sterilize you have a small scar and no pockets for re-infection.

The report of the Committee was accepted, with thanks.

CHEMISTRY, MATERIA MEDICA AND THERAPEUTICS

Chairman: Ben H. Hackney, M.D., Lucama

PITUITRIN IN THE TREATMENT OF NON-SURGICAL ENURESIS

Chairman's Address

The perennial interest that attaches to the treatment of Enuresis and the innumerable suggestions that are constantly cropping up in the literature for the treatment of this most frequent and annoying condition proves quite clearly that in spite of all the vast deal that has been said and written on this subject from the dawn of medical history to the present time there is still much room for improvement in the classical and routine methods that are now in vogue. This accounts in part for the wide spread interest shown in the lay and professional press in this country in the results claimed for the many advocated treatments for Enuresis.

So much has been written and especially in the public press on the treatment of Enuresis that it may be well to introduce the discussion of the subject by a preliminary statement of the condition arising from the peculiarities of the present frightful methods of publication which have added to the vast number of the ordinary causes.

For the purpose of treatment, the Etiology of Enuresis can be more conveniently handled under two general heads, namely, Surgical and Non-Surgical. The Etiology of the Surgical are: marked deformities, fissures, adhesions, lacerations, vesicle and Urethral Calculus. The Etiology of the Non-Surgical are: Insufficiency of the Sphincter Vesicae and Detrusor Urinae muscles, Debility of the neck of the bladder and of the internal Sphincter, general lack of tone of the entire muscular and nervous systems.

It is in connection with the treatment of these non-surgical cases that the new remendy, Pituitrin has come into prominence. It will, therefore, be of some interest to give an account of the history of this new method of threating Enuresis and, incidentally, of its originator, who has already told the story of his discovery in the Urologic and Cutaneous Review of October, 1917. In this most wonderful treatise by Dr. N. A. Mikhailow, of Petrograd, Russia, he explains in detail and in a step-like manner the results received in his clinics from a weekly administration of small doses of Pituitrin to a number of Enuretics varying in age from 28 months to as many years.

The luke-warmness with which the medical profession even in Russia received the first announcement of this so-called dis-

covery in striking contrast with the remarkable or extraordinary enthusiam with which the Pituitrin treatment was received and heralded in the public press.

So extraordinary have been the claims that have been made for this remedy, that a reasonable skepticism has been aroused as a result of an extreme and indiscriminate laudation and were it not for the testimony of creditable and thoroughly unprejudiced observers who have lately investigated the results of Dr. Mikhailow's treatment, it is probable that a really valuable acquisition would have been condemned in the face of the over-zealous and injudicious advertising that this treatment has been given at the hands of non-medical writers. The doubts cast upon the genuineness of the so-called discovery has been aggravated by the fact that Pituitrin is a proprietary product, manufactured and controlled by certain manufacturing companies.

This accounts no doubt for the scant sympathy which Pituitrin has received at the hands of the medical profession and the tardiness with which the undoubted merits of this treatment have been recognized. However, it is my purpose here to report upon the Therapeutic value of this remedy which if it can accomplish even one-tenth of what has been claimed for it, would be worthy of the foremost place among our resources in the Therapy of Enuresis. Fortunately, recent inquiries and especially those of so capable, unprejudiced and judicious observers as Dr. P. W. Pearsall, of Michigan, Dr. R. A. Forrest of California, Dr. J. D. Edmundson of Missouri, and Dr. E. L. Strickland of Wilson, N. C., fully sustain the value of Pituitrin as an agent of remarkable efficiency in the treatment of non-surgical cases of Enuresis, and while much that has been claimed for it may be discounted as an enthusiastic exaggeration, my personal experience of this preparation, limited as it is, is sufficient, I believe, to confirm in my mind at least the great value of this mode of treatment. I, therefore, feel fully justified in engaging your attention to its merits and in telling you of its results in my personal experience in the treatment of the following cases:

Case 1. Arthur R., a negro man, age 32, had been suffering from nocturnal Enuresis since birth and had been treated in three or more of our largest hospitals over long periods of time and was never able to be relieved of the annoying condition for more than a week at a time. On January 5, 1922, I began to administer Obstetricial Pituitrin subcutaneously once a week for six weeks. Cure after the second injection.

Case 2. Mrs. Lucy R., age 28, had suffered from nocturnal Enuresis since infancy and from Diurnal Enuresis during sudden excitement for sixteen years, was given Obstetrical Pituitrin subcutaneously in one C C dose every week for six weeks, beginning January 5, 1922. Cure after the second injection.

Case 3. Berry W., a man, age 22, had been suffering with nocturnal Enuresis since birth and had been treated by a number of

physicians without sufficient results to give him a single week's relief. Cure after six injections of one c. c. of Obstetrical Pituitrin, subcutaneously given at weekly intervals. All symptoms in this case were relieved after the first injection.

Cases 4, 5, 6, 7, 8, 9 and 10. These were seven children, varying in age from 7 to 10. Had all suffered from nocturnal Enuresis since infancy. I gave ½ c. c. of Obstetrical Pituitrin subcutaneously every week for four weeks. Cure after the second injection.

In conclusion, I can say of Pituitrin: It has given more prompt and more permanent effect than any single drug used by me. A point that I particularly wish to emphasize, and one that I have not seen mentioned, is the apparently cumulative or prolonged action of the drug. I can explain the fact only on the ground that Unstriated Muscle tissue that has lost its tonicity for some cause or other, having had that tone artificially restored becomes rehabilitated and again functionates normally, even when the artificial activators have been withdrawn, and when you keep up this so-called activator long enough, the permanent cure is effected.

Be that as it may, I am more and more impressed, as my experience with the agent becomes greater, with the wonderful superiority of Pituitrin over any other Thereapeutic agent in this peculiar field of usefulness.

DISCUSSION

Dr. A. L. Denchfield, Asheville:

I was going to ask a question. The reports have been so favorable that I want to ask if there are any failures.

Dr. W. F. Hargrove, Kinston:

I have had the same experience as our Chairman had, except that I gave only three doses. They were cases in children from three to five. I gave a minim for every year of age, and have had two cures, one in a child of three and one in a child aged five. I gave three doses in three weeks. Those are the only ones I have ever tried it on.

Dr. H. C. Daniel, Oxford:

I suppose I am more interested in this paper than any other physician present, because I am physician to a large orphanage, and have been troubled a great deal with enuresis. I have tried surgical interference a few times, but have had no results whatsoever in some cases. I think I shall try Dr. Hackney's treatment, and I shall be glad to report my results. I would like to know if you have followed up your cases, and to learn if all were cured or if you had failures, so that I may know what to expect in this trial which I shall give pituitrin.

Dr. W. L. Jackson, High Point:

I want to ask a question, because most of these cases are in children, and it is not so easy sometimes to administer drugs

hypodermically to babies, or at least we do not like to use this method. Would pituitrin given orally have any effect?

Dr. O. J. Corpening, Granite Falls:

I have used quite a bit of pituitrin orally, and it has been successful in about fifty per cent of the cases.

I would like to know how many cures Dr. Hackney has had.

Dr. Hackney, closing the discussion:

As you know, in the beginning of this paper I divided these cases, from the etiological standpoint, into the surgical and non-surgical. It was only in the non-surgical cases that I tried putuitrin, and my failures have been none.

I am greatly indebted to Dr. E. L. Strickland, of Wilson, for helping me out with these cases. He tried pituitrin in sixteen cases, with immediate and complete cure in fifteen.

As to the dose, smaller doses may work, and four administrations may work, because the cases in which I gave four adminstrations were just as completely cured as those in which I gave six doses. You remember that those to whom I gave six doses were adults, one over thirty years old. This one, thirty-two years old, happened to be a preacher, and I hear from him almost weekly as to what wonderful results were had, and am constantly reminded that the annoying trouble has not returned. As to the children, I had a report from all of them last Saturday morning, and there has not been a recurrence.

Of course, as I said in the paper, this was introduced by a Russian observer into our field of medicine.

As to administration by mouth, I have never tried the oral administration of pituitrin, but personally I would not favor it.

PYELITIS IN CHILDREN*

C. F. Strosnider, M.D., Goldsboro

In presenting a paper to you on this subject, I beg to admit that I am doing so with a view of calling your attention to a condition which is so frequently overlooked in the little patients by the practitioner. This disease is usually described in the textbooks as that of pyelocystitis, inferring that both the bladder and the lining of the kidney are affected, which at times is the case in chronic stages of the disease.

Pyelitis is described as an inflammation of the mucus membrane lining the pelvis of the kidney, usually due to infection. When the inflammation extends into the tubules which open into the pelvis of the kidney, the condition is called pyelonephritis.

Etiology—Pyelitis may be primary or secondary.

Primary Pyelitis — The primary form of pyelitis is very much the more frequent, and is a very common disease in infants and

*Read by title.

young children. It is primary in the sense that there is no local pathological condition of the genito-urinary tract to which the inflammation is secondary. It may, however, occur in the course of any disease, being particularly common in the acute diarrhoeas. The etiological connection with these diseases is not very obvious, and pyelitis may occur entirely without evidences of disease elsewhere, which has been my experience in observing this disease in children. Some authors claim that it is about nine times as common in girl children as in boys.

The microorganisms which cause this primary pyelitis of infancy is the bacillus coli communis In the majority of instances the colon bacillus is the only organism found, but mixed infections are occasionally seen.

The reasons why pyelitis has been regarded as of external origin are the following: (1) The almost exclusive occurrence of the disease in infants whose soiled diapers provide a ready means by which colon bacilli can gain access to the urethra; (2) The notably greater frequency of the disease in female infants, in whom the short urethra provides an easier route of invasion; (3) The frequent association of the disease with acute diarrhoeal conditions, in which the large number of colon bacilli are constantly discharged into the diaper. However, it seems rather strange that the infecting organism should skip the bladder, and should travel so far against the urinary current, to localize themselves in the pelvis of the kidney. Therefore, the pathogenesis of the colon bacilllus pyelitis must be considered an open question for the present.

Secondary Pyelitis—This form of the disease is much less common than the primary and may be seen at any period throughout childhood. It is regularly present with renal calculus, and may be found associated with congenital malformations of the kidneys or ureters, with renal new growth, with renal tuberculosis, and with perinephritic inflammations. I have seen it as a complication of malaria, pneumonia, flu, typhoid fever, pneumonia and other acute specific infections.

Pathological Anatomy—The common primary form is usually bilateral. The secondary form is usually associated with a local cause hence is most frequently unilateral.

The process is primarily a catarrhal inflammation of the mucus membranes, with congestion, swelling and exudation of serum and polymorphoneuclear leucocytes, which cells are among the first to be found in the urine of an acute case. In many cases, the inflammation extends into the tubules, causing degeneration of the tubular epithelium. In protracted and severe cases, small abscesses may be found in the renal parenchyma. If there is any obstruction to the free outflow of urine there may be an accumulation of purulent fluid in the pelvis of the kidney, leading to the condition knows as pyonephrosis.

Symptoms—In the common primary form, the only early symptoms

which occur with sufficient frequency to be considered characteristic, are fever and pyuria.

Fever is present in the majority of the cases at some time of the day ranging from 99 to 105° F—yet in a few cases we may have the urine loaded with pus and no fever present, but in these cases the patient refuses or spits up his or her food at intervals during the day. The acute onset of this disease often leads us off the right procedure—the mother frequently states that the child was all right when she went to sleep but on waking I found her with a high fever. The temperature may persist for from 48 hours to from five to six days with many slight chills, rise of temperature 102 to 104 during the day. At times for the first 48 hours of the illness the child is unable to retain nourishment or water, but otherwise appears to be getting on all right. The child does not appear to be seriously ill and many times desires to play. The frequent respirations of the shallow type is rather characteristic. The child does not complain of pain, but the mother does keep you well informed as to the child not eating. When the ureter is partially plugged with mucus nausea and vomiting persist longer than when free drainage is present, and it is then that a definite tenderness can be detected over the kidney region thus envolved. Cases may be accidentally detected in the routine examination when searching for the cause for the persistent anorexia in the chronic cases of pyelitis, which cases either run no temperature or a slight temperature of 99° in the afternoon. Again the temperature chart may resemble that of any other acute infection, and especially that of either quotidian or aestivoautumnal malaria fever, for which disease this condition is so frequently treated for months at a time by many of our brethern who do not suspect the real condition, and I may add, these men are neither with us today or in our county societies where these conditions are frequently reported and discussed. It is so easy to overlook this disease for the reason that there are periods of days without fever in the various stages of the disease, followed by fresh rises of temperature. In cases with high fever an absence of apparent general constitutional disturbance in proportion to fever, is often one of the notable characteristics of the disease. Another symptom which is rather common in the severe cases or chronic cases is bowel and bladder tenesmus, which can be readily understood when it is recalled that not infrequently a diarrhoea accompanies these acute severe cases, or eomplicates the chronic cases which frequently adds to the confusion in making the correct diagnosis. If there has been much vomiting, you will find on examination of older children, that the abdomen tenderness extends over the upper abdomen down to the umbilicus, especially when an ureter is partially plugged and the kidney is enlarged with retained urine. In children six years or older you can get tenderness over the pelvis of the kidney on first examination, which becomes more marked should the ureter become partially plugged, and when such persists for 48 hours the kidney can be readily outlined by palpitation and percussion.

When the kidney begins to drain the urine is usually turbid from the presence of pus. The amount of pus varies greatly, both in different cases, and from day to day in the same case. After the kidneys begin to drain there is usually enough pus present to be visible macroscopically. In my experience, the fever is usually highest prior to the macroscopical pus, and when the pus becomes macroscopical you can predict with practical certainty that the temperature will fall within 12 hours.

The quantity of urine secreted is usually diminished during the first 48 hours of the attack owing to the nausea, or nausea and vomiting present which condition coupled with that of a complete anorexia results in a less amount of fluids being taken. The reaction as a rule is acid. Albumen is present in proportion to the amount of pus and to the severity of the tubular nephritis which at times accompanies pyelitis. The sediment contains microscopically, pus cells, red blood corpuscles, and epithelium, and at times tube casts. The pus cells are well preserved and tend to occur in large round and long clumps or masses. Epithelial cells are numerous in the early stages of the disease. Round, conical and longtailed cells are likewise found early in the disease, as is the case with the red blood cells except in some secondary cases they are present to the amount of causing the urine to appear smoky. Casts are usually short and of large caliber.

In prolonged untreated cases anaemia developes.

Remembering that chills are very uncommon as a manifestation of disease in infants, and when they occur, should suggest pyelitis, more than any other possibility in diagnosis, malaria to the contrary notwithstanding. Nervous symptoms suggesting meningitis are some times seen, and pyelitis is one of the causes of "meningismus" in infants. With all of the other symptoms of acute infection which may occasionally occur in primary colon bacillus pyelitis, there is a notable absence of any symptoms or physical signs of a nature to localize the infection in the genito urinary tract.

Course: The course is variable in duration. In my experience these cases run from one week to nine months or longer, depending upon the duration of the disease prior to proper treatment being instituted. The most reliable thing about this disease is the unreliability of it in connection with its cure. Relapses and recurrences, even after long afebrile periods, are often seen. Then again fever leaves but pyuria persists for weeks in spite of the treatment. The blood will show a leucocytosis of from 10,000 to 30,000. Cases occuring in older children, are more apt to show symptoms other than fever and pyuria. Chills may occur at irregular intervals. Then too there may be localizing symptoms, such as frequency of urination, pain on micturation as evidenced by the child getting in abnormal positions to avoid crying out with pain which is accompanied by tenesmus of the bladder, as is evidenced by the child remaining at stool an abnormal length of time and at other times getting in the knee chest position after voiding.

DIAGNOSIS

The most neglected part of the routine examination of infants and young children among the general practitioners is the urine. In my opinion this can be accounted for by the comparative difficulty attending the obtaining from infants, particularly female infants, of a specimen of urine for examination.

We should remember that this disease is like unto that of appendicitis in that it can be readily diagnosed at times and then again the physician can be put to his wits ends to explain a continued febrile reaction in a child in whom the physical examination was always wholly negative. In such cases, after eliminating the ears and malaria, pyelitis stands first as a possibility in infancy, particularly if the patient is a female. In other words the diagnosis depends entirely on the examination of the urine. In this connection, I want to direct your attention to this very important observation which if not observed will mislead at sometime, every mothers' son of us if we are not on the lookout for this innocent and apparently normal event. You find the urine negative and you say no pyelitis; herein lies the chief source of errors and deception and a later source for self blame.

Therefore when this disease is suspected have the mother to send, or if the patient be an infant you collect, a morning and evening, specimen of urine for at least one week, and especially when an attack is on have a specimen of the 24 hour urine saved for you daily in order that the diagnostic cells may be detected early. This is especially important in chronic cases when the urine may be clear for six days in succession and be loaded with pus on the seventh day.

TREATMENT

To me at present is unsatisfactory.

I have tried several methods of treatment, which are as follows:

1. Making and keeping the urine alkaline.
2. The giving of hexamethalenimine, or some other urinary antiseptic, which I usually use in chronic cases.
3. Alternating weekly alkaline and hexamethalenimine treatment. I have gotten the best results from this line of treatment.
4. Excess of fluids, which has given me very good results.

I have to suggest vaccine therapy and when feasible catheterize the ureters and apply local irrigations of one of the silver salts as is done in similar adult cases.

"EARLY CHRONIC NEPHRITIS"

Wm. H. Smith, M.D., Goldsboro

About a year ago a man age 45 consulted me about a digestive upset brought on by a dietary indiscretion. Knowing this man had been a moderate drinker for about 20 years and that a year before a very able diagnostician had not found any evidence of

Nephritis I took his blood pressure and found both the systolic and diastolic elevated abnormally, that his urine contained albumin and casts. By direction this man freed himself of his digestive upset by purgatives and an easily digested diet and returned in a few days for another examination. At the second examination his blood pressure had dropped back to normal and his urine was normal.

This man had Early Chronic Nephritis as shown by the fact that he could not stand a dietary indiscretion without a rise in blood pressure and albuminuria and casts.

The diagnosis of Chronic Nephritis in the very early stage is most difficult. There is no sign upon which we can place confidence, especially if it is of a negative finding. The absence of albumin or casts, a normal blood pressure, a varying specific gravity or a normal phthalien output does not mean that the patient has not a beginning nephritis. Nor is the occasional finding of these assurance that the patient has nephritis.

It is the careful watching of the general condition of our patients with a wise judgment that determines the verdict. Frequently the diagnosis is made by elimination as the condition is essentially a toxemia and the symptoms are those which follow a toxemia and which may arise in any part of the body. A careful history and a complete physical examination are always necessary in arriving at the correct diagnosis. Often times the kidney condition is only a manifestation of trouble elsewhere, and by the curing of the distant trouble the kidney returns to normal.

SYMPTOMS

Symptoms which bring the patient to us are of different characters and large in number. In enumerating them one could start at the head and go through the entire body so protean are they.

The ones most frequent are concerned chiefly with the head, the digestive system and the kidneys themselves.

Of those referred to the head most common are dizziness, which is usually transient, but recurs several times a day and which progressively grows worse. Along with this usually goes headache, which is described as dull, and often of no particular part. This also tends to get worse. Complaint is made that the headache is present on arising, and this will help to distinguish it from headaches of other conditions.

Black spots in front of the eyes is another complaint which should make us think of nephritis. Colorless or white spots are not to be confused with this condition as the colorless spots indicate intestinal toxemia. Failing vision is a thing that accompanies nephritis, but usually is a manifestation of a later stage.

Sluggishness of the mental powers, such as inability to concen-

trate or to hold one's attention is another sign, but which may be caused by other conditions. A very useful help in the diagnosing of this condition is sleeplessness, and unless it is caused by worries or stimulants, I have found it to be most frequently caused by nephritis.

Passing to the digestive system, gas is frequently complained of, and one sign which has proven, in my experience, the most common digestive complaint is that of a lump in the epigastrium, or a full or heavy feeling. Other types are complained of. There is nothing distinctive in the character of the digestive upsets except the frequency of their occurrence.

The kidneys themselves manifest the disease almost always by the frequency of urination, especially at night. The patient may note the color as being usually light, but these two are the only subjective signs.

The body in general shows as an early sign a pastiness or yellow anemic appearance of the skin, which as the disease porgresses becomes more marked. Cold extremities and a sensitiveness to cold are fairly frequent complaints. Sometimes the only complaint is that of a tired sluggish feeling or a general muscular weakness. As was noted in the first part of this paper, the symptoms are so protean that one in discussing them could go on almost indefinitely, but I feel that the ones mentioned are the important ones.

DIAGNOSIS

The physical appearance of a person with Early Chronic Nephritis shows a pastiness or a yellowish discoloration of the skin. Another change in the color of the skin is a bluish tinge. Smoothing of the skin is another characteristic. Edema may show itself early and usually is noticed as a puffiness of the eyes, more noticeable in the morning on arising. Opthalmoscopic examination does not reveal, at this stage, any abnormalities nor is the eye sight usually affected.

Examination of the chest may reveal rales at the bases but usually they occur later. The heart is sooner or later affected by the toxemia producing a myocarditis as evidenced by irregularities and weak sounds with an accentuated second aortic or it may show a slight degree of enlargement, usually to the left.

The blood pressure shows an increase in both the systolic and diastolic readings. A constant diastolic reading is of great deal more value than the systolic, as the systolic is influenced by so many more things. But nephritis is one of the few conditions which cause a rise in the diastolic pressure. Examination of the urine is the condition upon which we base the diagnosis. The most reliable test is the fixation of the specific gravity.

In the examination of the urine in testing for the fixation of the specific gravity the two hour test is used. The patient is given

a diet containing a good amount of protein and sodium chloride The fluids given during the day are varied in quantity. At times a large amount is given, at other times practically none is given. The urine is collected at 2 hour intervals during the day and from 9 P. M. to 7 A. M. as one specimen. These different specimens are examined separately in the usual way as to sp. grs. albumin, sodium chloride, etc. The constancy of the finding of the specimens, especially as to the percentage of the solids is the distinctive feature in nephritis. For one not equipped to do the more elaborate tests the taking of the specific gravity is the important test. For it to indicate nephritis it should be the same in all of the specimens, or at least not varying over 7 points. It is also moderately low running from 1.010 to 1.017.

Another feature of this test which is not usually mentioned is the fact that this high protein and salt diet produces an albuminuria and a rise in the blood pressure.

This means that the nephritic kidney under favorable diet is able to function without albuminuria or rise in blood pressure, but that under stress it shows the disease, whereas, a normal kidney is able to stand up under the extra load. The value of the test can be increased by remembering this and testing the patient before, during and after the day of the test. The case cited at the beginning of the paper illustrates this feature as his dietary indiscretion through him off of the even keel on which he was going producing an albuminuria and an increase in blood pressure.

Albuminuria is usually present, but too much reliance should not be placed on whether it is present or not. The finding of casts, especially granular casts, is of significance, and in their presence we should be almost convinced of the diagnosis, especially if they are of constant finding. The phthalein test does not mean much in the early stage because it is usually normal. The other tests for elimination are of no more value than the phthalein except the ones which are more difficult and time consuming so that they will not be mentioned.

Summarizing the points of diagnosis, they are the complaints of the patient on presenting himself, his appearance, anemia, pasty color, edema, possible eye ground-condition, increase of blood pressure, especially of the diastolic, nocturia, fixation of the specific gravity of the urine, albuminuria, granular casts, and usually a normal phthalein out put.

TREATMENT

The treatment of Early Nephritis may be summed up in one word, "Moderation". Moderation in diet both as to quality, which means an easily digested diet without spices and condiments, of a low protein content and low sodium chloride content, also moderation in the quantity. Probably the last is more important than the

quality. Moderation also means regularity as to eating and regularity as to sleeping. A nephritic should have plenty of sleep and should rest for an hour or two in the middle of the day. Exposure to the extremes of temperature should be avoided, and especially long automobile trips are bad if they are of frequent occurrence. Worries of any kind cause more harm than probably we are accustomed to think.

Elimination by the bowel should be kept up by purgatives as often as needed, at least once a week. And elimination by the kidneys should not be attempted by having the patient drink enormous quantities of fluids as edema is liable to be caused by too much fluid intake.

In the treatment the probable causes of the condition, such as focal infection, whiskey, syphilis, eye strain with its attendant, nervous strain, and digestive upsets should be eliminated and the patient should be instructed not to do anything which is likely to injure himself in any way. Hot baths, and especially sweat baths occasionally, are helpful, but cold baths are harmful.

Drugs are probably of no value, except to make the patient feel that he is being treated, unless iron is needed for the anemia or some especial condition is present. Of the drugs potassium citrate or acetate are possibly the best to use as placebos as they have some protective value to the kidney itself.

DISCUSSION

Dr. Wm. deB. MacNider, Chapel Hill:

To what type of chronic nephritis do you refer?

Dr. Smith, closing the discussion:

I did not make any differentiation between the glomerular type and the tubular type because I do not know whether these very early cases, of which I was thinking when I wrote this paper, have a distinctive starting-off. As I understand, Dr. MacNider, the theory now of the action of the kidneys is that execretion takes place by osmosis, and the fluids that leave the glomeruli are essentially the same composition as the blood. The tubular part of the kidney has a selective action by which it takes up the different parts of this plasm, absorbs part, and leaves part in the tubules, which is then passed out as urine. I do not know how to explain the excretion of the phthalien under those conditions, unless the cases in which you get a low phthalein output have a more or less high grade glomerulea nephritis.

RHUS POISONING AND TANNIC ACID AS A TREATMENT

L. J. Smith, M.D., Wilson

Any physician who has treated a case of rhus poisoning (ivy poisoning) must have realized the uncertainty of the many therapeutic remedies suggested in our textbooks on this subject. When you see so many different remedies for a certain disease, you may

rest assured that none of them are specific. However, it is my purpose to add another remedy to the already long list, but with the feeling that, once you use it, you will discard all other remedies and become convinced, as I have been, that this is a specific for rhus poisoning.

The story of this discovery is as follows: The credit for the real discovery is due Dr. G. A. Foster of Liberty, N. C. Once while he was attempting to treat a case of rhus poisoning for a barefoot boy, an old tanner appeared at his office and, as is the customs with certain laymen, he advised the patient to appear at his tannery and he would cure him. The Doctor paid little attention to this, but the boy did, and in a few days the Doctor met the boy on the road and asked how he was getting on. The boy replied that he was then cured, whereupon he told Dr. Foster of the virtue of placing his hands and feet in a tan vat for a few minutes. This put the Doctor to thinking and, as a result of that thinking, he arrived at this conclusion: If oak tan bark, which contains tannin, cures rhus poisoning, then tannic acid should do the same thing. For several years he used this remedy, always with good results. My connection with this discovery was as a patient under treatment by Dr. Foster, and, to use the phrase of testimonial writers for patent medicine: "I was cured with only two applications.". Since that time I have used tannic acid in my practice for the cure of rhus poisoning, and have yet to see it fail to cure.

A saturated watery solution of tannic acid applied to the affected parts two or three times a day is the method used. Some physicians tell me that they add carbolic acid to this prescription and get good results.

For ten years I have been making an effort to find out the physiological action of tannic acid in the treatment of rhus poisoning, but have so far failed to be enlightened on the subject. It is my desire to see this simple remedy taken from the field of empiricism and placed on a higher plane of scientific medicine. Before doing this we must know the chemical nature of rhus poisoning (poison ivy and poison sumach). In 1912 and 1913 there appeared a series of scientific articles in the American Medical Journal by some one in California, who isolated a substance from poison ivy and poison sumach which was alkaloidal in character. I do not know if there has been any more recent work done on this subject. Anyway, this gives us a basis for scientific theory. We know that tannic acid is a chemical antidote for nearly all alkaloidal poisons. If that substance causing rhus poisoning is an alkaloid, then we have a scientific reason for using tannic acid in the treatment. It is well known that tannic acid has strong astringent properties and we might say that it depends on these properties for its physiological action, but other drugs with strong astringent action have been used in the treatment of rhus poisoning without beneficial results. Hence we must conclude that tannic acid depends for its good results on its powers as chemical antidote.

My purpose in writing this paper is twofold: First, to call attention to a simple and efficient treatment for a disease which heretofore had no satisfactory treatment; second, to stimulate discussion to place this treatment on a scientific basis.

DISCUSSION

Dr. Ben H. Hackney, Chairman:

Dr. Smith's paper is short, but he has used lots of thought in it and we would like to have a good discussion, particularly in this mountain section, where the rhus toxicodendron is so plentiful and poisoning so prevalent.

Dr. A. L. Denchfield, Asheville:

I do not understand just how tannic acid would have a beneficial effect in rhus poisoning, because, as I understand it, tannic acid is not absorbed through the skin in any way, and yet the irritating substances that produce the itching and swelling, etc., all lie under the surface. I have had greater success in treating it with plain, ordinary tincture of iodin, sometimes one application being sufficient. Iodin, as you know, is absorbed through the skin and in that way tends to counteract the cause of the irritation.

Dr. R. L. Carlton, Winston-Salem:

Does Dr. Smith do any preparation before applying the solution of tannic acid? Does he rough up the skin, or try to break the surface of the little vesicles?

Dr. W. F. Hargrove, Kinston:

I see a case once in a while, when a fellow comes in with some eruption. We try first one thing and then another, and sometimes they get well in spite of treatment, if you give them time. It is, in a way, self-limiting. After trying a good many things, I have gotten good results from green tomato, or tomato vine. Rub it up to a pulp and make a poultice of the pulp. As a rule, it will be cured by one day's treatment. Whether or not the effect is due to tannic acid I do not know.

Dr. O. J. Corpening, Granite Falls:

I came across a layman who was using a solution with good results. He boiled some leaves and roots and made a solution of half of this and half vinegar, and got good results from it. I suppose that the tannic acid was what gave relief.

Dr. Wm. H. Smith, Goldsboro:

I have a different idea about this. My understanding is that it is a dermatitis induced by a very irritating oil which is on the leaves of the poison oak or poison ivy, and that if it is seen early, before the dermatitis has gone on very long, a brush or a rough cloth and soap and water will cure it by washing off the irritating agent, which is the oil. If it has gone further, the oil ought to be washed off,anyway, and some soothing agent applied to relieve

the dermatitis. That is my conclusion, and if I am wrong I would like to be set right.

Dr. Smith, closing the discussion:

I appreciate very much the discussion. I still regret that we have not a scientific reason for the use of this drug. I know it is placed in this class of empiricism. This may not be scientific medicine, but personally I believe that God has placed in the world an antidote for every poison, and it is up to man to find it out.

Answering Dr. Carlton's question as to previous preparation before applying the treatment, I have never used anything at all. As to the strength of the solution, I use a saturated solution. If you prefer, you can wet the skin with water and then rub the powder on.

Another question is whether the tannic acid reaches the activating cause. In answer, I would like to say that this remedy seems to cure in the course of twelve to twenty-four hours. Personally, I had on my hand, when I tried it, very decided blebs. I did nothing at all to break them, in any way, shape or form, but applied it one evening about suppertime, and the next morning they were nearly all gone. I put a second application on, and no further itching or blebs appeared.

There is one other thing I want to mention. On one occasion I told a young friend of mine in Raleigh about this. He said he had a case and would use it right away. The next time I saw him I asked him how it came out, and he said that it was just a little too good, that it cured the patient too quickly. Another thing was that the patient had been using an iron preparation, and he made a negro out of a white patient by using tannic acid after the iron. So there is this caution, be careful about using it after iron lotions.

As to the nature of the poison, that is the thing I wanted discussed and brought out. No one seems to know what it is.

THE RELATION OF BLOOD INFECTION TO FOCAL INFECTION

W. R. Stanford, Durham

The relation of blood infection to focal infection is a close one —in fact as close as cause and effect, the one being a local manifestation while the other is a systemic one. They have gone hand in hand throughout the ages; long before the days of bacteriology it was noticed that systemic conditions followed local processes. Semmelweiss, in 1847, traced the constant prevalence of child-bed fever in the Vienna Lying-in Hospital to the contamination of the genitalia of the women in labor by the unclean hands of the students and physicians fresh from the dissecting rooms. Klebs was probably the first to recognize that local and general sepsis were due to micro-organisms which he termed microsporon septicum. After

Klebs came Lister and Pasteur, and it is from these two men that our knowledge of bacteriology and its relation to focal and systemic infection dates.

The invasion of the blood by pathogenic bacteria is referred to as septicemia, and the bacteria chiefly concerned in the causation of septicemia are: Streptococcus Hemolyticus, Streptococcus Viridans, Staphylococcus Pyogenes Aureus, Staphylococcus Albus, and numerous others such as: Pyneumococcus, Gonococcus, Meningococcus, Colon Bacillis, Friedlander's Pneumonbacillus, Bacillus Pyocyaneus, Micro-coccus Tetragenus. Mixed infection are also common.

The chief portals of entry according to Lewellys F. Barker, (1) are: The tonsils, the antro, the ethmoid cells and other paranasal sinuses, the mastoid cells, the appendix, the gall-bladder, the lung cavities, the pleurae, and foci in the urinary and genital systems. Phemister (2) emphasizes foci in the skin as sources of staphylococcus infection. Billings (in his Lane Lecture on focal infections) mentions furuncles and carbuncles as well know sources of acute bacteriemia, and also mentions the rectum as a site for focal infection giving rise to bacteriemia, etc., through ulcers and infected thrombi. Stevens in his Practice of Medicine enumerates the chief portals of entry as: (1) the skin, (2) the uterus, (3) the upper air passages, (4) the urethra. There are many external forces that cause a systemic condition to arise from foci of infection. Some of these are: Mental and physical exhaustion, starvation, exposure to cold, trauma, operation, weakness, dissipations of all sorts, the modus operandi being that they lower the body's resistance and increase its natural susceptibility to bacterial invasion. This in a brief way brings out the etiological factors and shows the relation between blood infection and focal infection.

The morbid anatomy of blood infection presents in the more severe cases extravasations of blood under the skin, as well as in the substance of various organs, and may show petechia over the skin and infarcts in various organs. The spleen is usually more or less swollen and congested, the lungs are congested and may show areas of pneumonic processes. The heart, kidneys, liver are seats of cloudly swelling. The heart may show a true interstitial myocarditis; endocardial involvement is quite common. The vegetations on being cultured show most commonly staphylococcus, gonococcus, non-hemolytic streptococcus or steptococcus viridens. Myotic aneurysms may occur and the liver and kidneys may show areas of necrosis. Billings says that this is particularly true when staphylococcus is the etiological factor. The pleura and pericardium may also show sites of inflammation.

Billings in his enumeration of symptoms of bacteriemia with endocardial involvement states that detached small particles of vegetation and thrombi carried into the blood stream may cause embolism in various tissues and organs. These in turn may give rise to delirium, coma, paralysis, perisplenitis, varying degrees of

hematuria, gangrene of distal tissues and petechia. At any local point abscesses may develop from infected thrombi.

The constitutional symptoms of blood infection vary with the severity of the infection and the type of organism causing it. The mild type of case is characterized by a feeling of chilliness, malaise, headache, muscle pains, loss of appetite, fever ranging from 101 to 102, hot, dry skin and restlessness. Severe cases often begin with a chill and a temperature rising shortly to 104 or more. The chills are followed by sweating and there may be daily remissions of temperature. Billings mentions several types of blood infections; the septic which has remission of temperature as described above; the typhoid type, which is characterized by a sustained temperature, delirium, coma and a rapid course. He goes on to state that in rare instances the clinical picture is that of cerebro-spinal meningitis. Except in the mildest cases there is often a well-marked leucocytosis (15,000 to 30,000) and also a secondary anemia. Mark A. E. (3) in speaking of anemia due to sepsis, mentions that Gull and Goodall state that absorption of septic products as in malignant endocarditis and puerperal fever show blood changes which are profound. The urine is concentrated and usually shows albumen, also hyaline and granular casts, and may show red and white blood cells. It is often possible to obtain the living organisms from the blood stream by culture. Death occurs usually in from one to three weeks.

Chronic blood infection is usually caused by the streptococci of the viridans group. This type of infection may last for weeks or months. It is characterized by occasional chills, irregular fever, anemia, weakness, endocarditis, enlarged spleen, patechia, peculiarly reddened infected finger ends, normal or slight leucocytosis, red blood cells in the urine, and practically always comes to a fatal conclusion. Barker thinks that granulomatous areas about the teeth are the most frequent foci for this type of infection. He goes on to state that he has seen twenty cases all of which died.

The diagnosis of septicemia is often easy, but at times is very hard to make, especially when there is no evident focus for the infection. The diagnosis should be based on the occurrence of irregular fever, chills, anemia, leucocytosis and history. Repeated blood cultures if positive are very strong evidence, but if negative do not disprove it. In the differential diagnosis: typhoid fever, malaria and miliary tuberculosis are the chief things to be considered. In ruling out typhoid one depends largely on the history, the physical examination, the Widal and blood culture. Malaria can usually be ruled out by the history and the failure to find the plasmodium, and if necessary, the therapeutic test of quinine may be tried. Miliary tuberculosis can usually be ruled out by the failure to find any signs of local tuberculosis, by the leucocytosis, by the examination of sputum and spinal fluid (with guinea-pig test, cell count and differential count), and by the family history. Blood culture is the only method which definitely shows the type of blood infection.

The prognosis depends upon the type and severity of the infection, and the resistance of the patient. In general, the prognosis is bad, especially if there is endocardial involvement. Billings says that he had two cases of gonococcemia with suppurating multiple arthritis to recover. He also mentions that Thayer reported two cases of gonococcus endocarditis which recovered; also that Herrick had noted recovery in malignant endocarditis, and that E. R. LeCount in Coroner's Autopsy Cases found six or more cases of healed scars of ulcerative endocarditis. Billings has also seen three cases out of more than a hundred cases of streptococcus viridens bacteriemia recover. Libman has reported recoveries in this type of infection. Stevens in his Practice of Medicine states that contrary to belief formerly held, true septicemia even if due to streptococci is not necessarily hopeless.

The treatment of septicemia, judging from what has been said above, in a large percentage of cases is discouraging. The general measures consist in pushing water, elimination, proper food and proper hygienic measures. The chief drugs of value are strychnin, digitalis, morphine, alcohol and quinine. J. H. Stokes (4) (Mayo Clinics 1920) tried arsphenamine with unfavorable results. Merklin and his co-worker reported a case of septicemia arrested by the use of polyvalent vaccine (staphylococcus, streptococcus and pneumococcus) where recovery followed four injections of vaccine. (5). A Kroft and N. M. Leitch (6) showed that in experimental septicemia morphine exerted a harmful influence. Serum treatment has given variable results. In my three years at the University of Pennsylvania Hospital I recall one case which seemed to be benefitted by serum. This was a case of staphylococcemia in a youth of fourteen, which case was recently reported among a series of Staphylococcemias by Albert E. Bothe (7). This particular patient's blood culture became negative and he seemed to improve for a time but died following an operation for osteomyelitis of the right pelvis. Polak has stated that frequent small blood transfusions have given excellent results in some severe cases. Stengel used fresh anti-streptococcic horse serum in a case of septicemia with sub-acute endocarditis with excellent results. Edward B. Piper (8) has recently reported some rather encouraging results from the use of Mercurochrome intravenously.

A good deal of work has been done along the line of clearing up foci of infection as a therapeutic measure, but it is very much like blowing out the match after it has been touched to oil—the systemic condition is usually not affected.

Before attempting to bring this paper to a close I would like to present a case which, I think, illustrates some of the points which I have tried to bring out.

L. H.—A female aged 19 (factory worker), was admitted to Watts Hospital on January 30, 1923. She came in unconscious so the history had to be obtained from the family. Some time in the late Fall (1922) she had had some boils which were probably treated;

about three weeks before Christmas she began to complain of sharp pain in left side and small of back, and a short time later the pain radiated to her left shoulder and she became so sore that she could not turn in bed. Her appetite became poor and she had some cough, but she continued her work in the factory until three days before Christmas, when she was obliged to go to bed. A doctor was called in and her condition diagnosed as influenza. A little later she began to have pain in her legs and red bumps appeared over her body, mostly on her face. Finger and toe tips became sore and festered, and about this time she had a small nose bleed; her father thought she had some chills. There was no digestive disturbance except loss of appetite; hand and feet had not been swollen. On January 28, 1923, she became stuporous and delirious and remained in that condition. Her past medical, social and family history were all negative.

Physical examination on admission showed a somewhat emaciated, anemic, stuporous girl of 19; some muttering; good many petechia over body; some bloody bullae on feet; pupils equal and reaction normal; mouth dry, tongue coated; neck rather rigid, head retracted. Chest; Expansion fair; good many moist rales heard in region of left axilla; no bronchial breathing or friction heard. Heart enlarged, to the left especially; a loud musical murmur heard over heart, best at apex; rate regular but rapid (140). Abdomen rather rigid but otherwise negative. Extremities rigid; some ankle clonus on both sides Konig present; also some muscular twitching.

She was admitted with a temperature of 105.4, a pulse of 120, and a respiration of 24. Temperature ranged from 102 to 107; there was a slight daily remission but most of the time it was a fairly sustained temperature. Her pulse ranged from 120 to 164, respiration from 24 to 56; the urine showed a cloud of albumen—no other abnormal findings. Leucocyte count of 20,000, R.B.C. 2,670,000; hemoglobin 35%.

Of course, typhoid was thought of, but the main things considered were miliary tuberculosis and blood infection, with the odds slightly in favor of blood infection because of the evident endocarditis. A Widal and blood culture for typhoid were negative; the spinal fluid showed no tuberculous organisms, cell count 117, globulin present, sugar negative; a culture of the fluid was also negative as was the guinea pig test; the Wassermann and Von Pirquet were negative. A blood culture taken 2.2.23 was positive for staphylococcus; examination of eye grounds revealed no petechia or tubercles . . . . Her condition gradually grew worse and on February 3, 1923, she died. A second blood culture taken the day she died showed a positive culture of staphylococcus.

Although little change could be noted in the size of the heart and character of the murmur from day to day, I feel certain that the patient was suffering from a staphylococcemia with endocardial involvement. I also think it is logical to assume that the

boils were the original foci. The positive blood cultures seem to be fairly conclusive evidence.

This case was especially interesting to me because of the unusual amount of cerebro-spinal irritation, the cardiac involvement, the difficulties it offered in differential diagnosis, and last of all because it seemed to show the relation of focal infection to blood infection.

In our attempt to draw conclusions from this study there are several things that seem to stand out. I. That focal infection in a large percentage of cases is the forerunner of blood infection. II. That the prognosis depends upon the severity and type of infection. III. That treatment of septicemia is uncertain and, in a large percentage of cases, unsatisfactory. IV. That there are several types of septicemia. V. That the blood culture is the surest means of determining the specific organism causing the infection. VI. That removal of the foci after the blood stream has become infected does not seem to do a great deal of good.

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DISCUSSION

Dr. R. McBrayer, Sanatorium:

I think a paper like this ought not to go undiscussed. There is one point which I want to emphasize, and that is this: I do not believe we use frequently enough blood cultures. We can request Dr. Shore to send the containers to us, and we ought to have these examinations made. We have to use care in collecting the specimens, as otherwise it is reported back that the cultures are positive. I do think that we should use blood cultures more often, and, as the Doctor emphasized, we should not stand back on one negative finding.

Dr. Stanford, closing the discussion:

There is one thing that I left out. I did not mention that, in most of these cases where there is endocardial involvement, the spleen is usually enlarged. I was not able to tell in this patient whether the spleen was enlarged because of the rigidity of the abdomen. I might have gotten some idea of the size of the spleen by percussion, but I think this method is a rather poor one for detecting splenic enlargement.

A REVIEW OF OUR LAST THREE YEARS' LABORATORY WORK

By the Staff of the North Carolina Sanatorium
Sanatorium

The inception of this report came several months ago from the President of the North Carolina State Board of Health, Dr. Joseph H. Way. We thought it timely because our laboratory was inaugurated by that board, and under their control grew to its present very high standing, which places it well in the class with general hospital laboratories. Too, an inventory is necessary in all business, that values may be assessed, and particularly is this essential in this field of medicine, where overhead expenses seem to be so great. Obviously a critical and authentic review, with its conclusions and action thereon, cannot be made where records are not kept permanently, completely, and accurately. It is to be regretted that our profession does not do more record keeping, for no one thing more than this has caused Sir McKenzie, of London, to be the leading authority on the heart, its diseases, their treatment and prognosis. Another reason for this report is that it is based on the patients belonging to the medical profession of this State, therefore what we have learned by studying them rightfully should be reported to you.

We will not attempt discussion of techniques, but will endeavor to point out some practical conclusions that we have drawn from this review, which is based on a part of the laboratory work done on 1,143 consecutive admissions to the Sanatorium during the years of 1920, 1921 and 1922.

Sputum Examinations—We collect the early morning expectoration, and leave it to the technician to choose the most promising particles for staining, rather than instructing the patient to put into his cup only that material which he coughs up from his lung. Our technique is a direct smear on two successive mornings, followed by at least one antiformined 24-hour output of sputum, in the event the two direct smears are negative. When properly done, it is seldom we find a sputem positive by subsequent direct smear when the first two are negative. Only one time has the laboratory reported tubercle bacilli present when the history, physical examination and x-ray were negative to clinical tuberculosis. In 267 incipient cases we demonstarted the tubercle bacillus in only two per cent of 1,390 examinations, which is over five examinations per patient. Not infrequently we have patients tell us that their doctor told them a few months ago that they had no tuberculosis because their sputum was negative. These findings obviously force the statement: do not wait until the sputum becomes positive to make the diagnosis. In 376 moderately advanced cases 20 per cent of 1880 sputum examinations were positive; however tabulation of the admission sputanalyses shows it to be nearly 30 per cent of positives, the apparent discrepancy being in the fact that the 20 per cent includes the examinations made during residence and on dis-

charge—many of the latter being positive on admission and negative on discharge. In 441 far advanced cases with 1514 examinations 67 per cent were positive, though further analysis shows that in nearly 90 per cent of these 441 cases we were able to demonstrate the tubercle bacillus. With better diagnostic methods and procedures the clinician is demanding practically 100 per cent of positive sputa in the far advanced cases; at least, when the tubercle bacillus can not be demonstrated he questions the clinical diagnosis of far advanced tuberculosis. Only recently we have seen several cases that from history and physical examination would easily be called far advanced, though with negative sputum. Subsequent study revealed the etiology of the pulmonary pathology to be other than the tubercle bacillus. On the 552 admissions in 1922, thirty were found positive by the antiformin method when negative by direct smears, showing that the use of this method or principle is well worth while. Too easily we accept one or two negative findings as definite evidence. Our findings are that in less than 50 per cent of our positive findings did we demonstrate the tubercle bacillus on the first two examinations. In several cases it was the ninth and tenth examinations that were positive in the known active cases.

In eleven examinations of sputum for spirochaeta bronchialis we have been able to demonstrate him five times. Some able pathologists believe this organism plays a large part in cavity formation, therefore we expect to direct more of our attention in his direction. Non-specific spirochaetosis of the lung and bronchial tree is not as uncommon, some workers report, as we are wont to believe.

Urinalysis—Of the 2,430 examinations, 30 per cent were positive, that is, contained one or more of the following: casts, albumen, many pus cells, many W.B.C., or some R.B.C. An occasional epithelial, pus and white blood cell we accept as normal. On the most of the positive urinary finding cases, phenolsulphonephthalein functional tests and blood ureas were done—and repeated on discharge or during residence. This resulted in our having recorded 379 of the former and 357 of the latter. Because we are intensely interested in the kidney in pulmonary tuberculosis, we are later to make a more detailed report of our findings and opinions. However, we desire to point out the following: Our procedures in a urinalysis are fewer than in the long taught and accepted classical urinalysis, in that we pay no attention to specific gravity, color (unless definitely abnormal), odor, amount or sediment. The specific gravity of one specimen of urine means absolutely nothing—because the specific gravity varies widely with the fluid intake; however a properly controlled test for fixation of the specific gravity is of a great deal of value and doubtless is one of our very first indications of impaired renal function. We frequently employ this test, though when fluid intake is not controlled, a specific gravity determination is not worth the time it takes. You immediately think of the high specific gravity findings in diabetes mellitus, and the low one in chronic nephritis, yet no one ever makes a diagnosis of the former or the latter on a specific gravity reading, because he

actually tests for sugar in the one, and a microscopic examination decides the other. When a urine is alkaline we do not examine it, but request a fresh specimen, and inform the nurse that her container was probably not clean. Probably not enough attention is paid to examining urine as it actually came from the body, rather than the urine that has become alkaline which, at least chemically and bacteriologically, is not the urine voided by the patient. We pay no attention to sediment because we examine that in detail under the microscope. The indican and diazo determinations are of some value, though not worth while as a routine. A true indican study, with the control of its exogenous sources, should point strongly to destruction of body tissue by putrefactive processes, rather than to constipation, etc. During 1922, 28 specimens of urine gave positive evidence of nephritis or inflammation of that tract, while on the same day catheterized specimens were negative. Albumen, R.B.C., and pus cells were the abnormal findings that were present in the uncatheterized specimens. Much more care than is ordinarily given is demanded in getting uncontaminated specimens of urine, with consequent error in diagnosis. A few false positive sugar findings have occurred, however, the reason was always traceable to drugs, dirty test tubes, or faulty reagents. Just here we want to emphasize the fact that alone a positive Fehling's or Benedict's test for sugar does not mean diabetes mellitus. Tubercle bacilli in the urine are not difficult to demonstrate in tuberculous involvement of this tract, though the Hay and Smegma Bacilli are frequently mistaken for the tubercle bacillus because they inhabit these external regions and are also acid fast. Twenty-four hour outputs of urine very frequently show a trace of albumen when all fresh specimens are negative, therefore we have learned that its presence is of no diagnostic value, hence we disregard it. This will doubtless hold true for any old and alkaline urine. Our experience causes us to subscribe most heartily to the teaching (not frequently enough practiced) that normal urinalyses not infrequently are found in cases of definite nephritis, therefore a normal urinalysis does not preclude a diagnosis of nephritis.

Analysis of Feces—This is done routinely on admission for amebae, parasites and ova. In this paticular work the laboratory has been of most service in diagnosis. This report covers the last four years during which time 1376 examinations have been made on the 1243 patients admitted. In nearly 6 per cent of these patients hook worm ova have been found. Last year one of our ablest clinicians reported 1-10 of one per cent as his hook worm incidence in 1000 consecutive cases coming to him for examination. Our findings are 60 times this finding, and at that doubtless several cases harboring hook worms were not found by us. To us this means that all of us should renew our search for this parasite. When Dr. Shore, at the State Laboratory, does it free of charge, certainly the six patients, at least, out of each hundred in our State should be found. It is a very encouraging sign, however, when our records for 1919 show 10 per cent infestation though the average for the last four

years is not quite 6 per cent. In two cases recently admitted as having tuberculosis, we were not able to find any evidence of tuberculosis, the only evidence of disease being uncinariasis, which when treated, resulted in an apparently symptomless and well patient. Again, one or more negative examinations mean nothing because not infrequently do we demonstrate the eggs on the 5th, 6th and 7th examinations. In 44 cases of uncinariasis that were repeatedly studied for eosinophilia, only 23 were above 4 per cent, however we feel that an otherwise unexplained persistent eosinophilia places the burden of proof on repeated (six or more) negative feces examinations. When repeated counts show no eosinophilia we are prone to believe the patient does not have clinical uncinariasis, but simple infestation, however treatment is the same. In only 6 other cases have we found other intestinal parasites.

Blood Counts—Though done routinely because the patient deserves it and because this frequently points to other conditions as Hodgkin's disease, severe secondary anemia, pernicious anemia, parasites, chlorosis, etc., we do not consider it of any diagnostic value in tuberculosis, though as a rule the more virulent the infection the higher the white cell count, especially in tuberculous bronchopneumonia. In uncomplicated pulmonary tuberculosis we frequently get counts of 15,000 to 20,000. In the last 512 patients, 415 or 81 per cent, had a white cell count of over 9000. We emphasize this because, according to text book teaching, a leucocytosis usually does not occur in pulmonary tuberculosis, therefore the clinician may think of something other than tuberculosis when he gets these high counts.

Wassermanns—These also are done routinely on admission. In the last 690 admissions nearly 2 per cent have had positive reactions, while nearly 3 per cent have had one and two plus. Almost invariably the latter become negative as their tuberculosis improves, which is additional evidence that the Wassermann reaction is not specific. We never call a case luetic on one 3 or 4 plus reaction alone. When clinically the patient has lues it is all right, but there are too many sources of error between the taking of the blood and the reporting of the results to permit one to make a diagnosis on a single definitely positive Wassermann. For this reason all our weakly or strongly positives are repeated, as well as are many negatives where we think lues a possible clinical diagnosis. Just here we want to praise the work of the State Laboratory, where all our Wassermann's are done. We wish at times that a more sensitive antigen could be used, though the conservative technique results in fewer errors of diagnosis than will the more sensitive one.

Basal Metabolism—We began our work with a small portable machine with which we made 91 determinations, the results of which were presented to this meeting two years ago. Study and observation soon caused us to know that this machine was inaccurate, and too liable to unavoidable errors for use where its results were the basis of diagnosis and treatment, therefore we re-

placed it by a Tissot gasometer with the Haldane gas analysis apparatus, which is truly the only correct and reliable method of determining the basal metabolic rate. With this Tissot machine we have made 60 determinations which cause us to state that in uncomplicated afebrile cases of pulmonary tuberculosis the B. M. R. is normal; the corollary is that in any case of tuberculosis showing an abnormal rate the cause therefor must be sought in a complicating or coexisting condition. This has been of much help in separating the rapid pulse rate cases into hyperthyroidism or uncomplicated tuberculosis. Too, the decreased rates we are observing in uncinariasis deserve further study and will be the subject of a future report. Certainly it makes the clinician's ideas change from the diagnosis of hyper-or hypo-thyroidism to a larger diagnostic field in which he will reason in this manner: This abnormal rate resulted from an increased or decreased amount of thyroxin in the individual cells of the body, but what I want to know is what condition is causing this thyroid gland to secrete too little or too much thyroxin. As examples of the former we suggest hook worm disease and Addison's disease, while as examples of the latter could be named some focal infections, at times, and the compensatory secretion (which very frequently is hypersecretion) of puberty and early adolescence.

Fractional Gastric Analysis—During the 20 months prior to January 1, 1923 365 fractional gastric analyses were done, from which the following conclusions are warranted:

1. A pupil nurse or trained attendant can well perform this entire procedure, except the actual laboratory work. In the Hospital Association meeting on Monday an article on this phase of the subject was presented by our head nurse.

2. The consistent finding in pulmonary tuberculosis is a mild hypochlorhydria to an occasional achlorhydria. The gastric symptoms so commonly seen in this disease are therefore virtually completely removed by the administration of hydrochloric acid based on the deficit as determined by this procedure. Not infrequently we give a patient 100 or more drops after each meal for five to seven days at a time, which results in relief from gastric symptoms, so called "biliousness" disappears, and a gain of weight.

3. When the curve is that of hyperchlorhydria the cause will usually be found in organic disease of the stomach, gall-bladder, intestines or appendix.

4. This procedure warrants much more common use for the patient's sake.

Blood Coagulation Time—We use Howell's technique which calls for venipuncture, and one cubic centimeter of blood. We have elaborated this technique to meet our particular needs in the treatment of pulmonary hemorrhage. By this method we have corroborated the findings of others that the coagulation time in pulmonary tuberculosis is usually within the normal range, though more frequently longer than shorter than normal. Too, much benefit

has accrued to the patient by having determined whether intravenously given calcium chlorid or subcutaneously given concentrated biologic antecedents of fibrin is needed in his particular case to lower his coagulation time. This determination is not difficult and the results obtained in vitro have been repeatedly obtained in vivo. We believe this to be the only truly rational drug therapy for the treatment of pulmonary hemorrhage.

Non-Surgical Biliary Drainage—Though we have used this well recommended procedure in several definite gall bladder cases, we have not been able to see any desirable results. However, we are not averse to its use, and feel sure that ultimately it will have a definite place in treatment and diagnosis.

Hemoclastic Liver Function Test—This is based on the findings of Widal in anaphylaxis. Probably this plays a part in the production of the gastric symptoms so commonly seen in tuberculosis, however the conclusions and definite reactions obtained by some enthusiastic workers are not warranted in our small series of cases, but we are still at work on it, with the expectation that the principles are correct, and too, because any procedure recommended for testing liver function should be thoroughly studied, with the hope that we can learn more about the determination of this organ's pathologic physiology.

Obviously, we have not touched on our bacteriologic, pathologic, and experimental laboratory work, because these subjects do not lend themselves so well to analysis from a standpoint of practical results.

The Superintendent's policy of having each new member of the medical staff spend several weeks as a whole time laboratory man accounts for a great deal of the benefit the patient derives from the laboratory when the junior man goes from his laboratory service to ward service.

It is to be regretted that in many instances laboratory procedures are both over and under estimated, with the result that the patient does not derive from the laboratory all the benefit it is able to give.

In closing, we desire to give due credit to Miss Maud Mann, one of our graduates in nursing, who for several years, did all the technical work, and who for the last eighteen months has been a most valuable laboratory secretary and assistant.

DISCUSSION

Dr. W. L. Dunn, Asheville:

Dr. McBrayer's paper is hardly a discussable paper, because it is largely a report of the type of work that is being done at our State Sanatorium. I do not think anything is open for discussion that speaks for more careful examination of the patient who happens to be the victim of tuberculosis, whether the examination is made wholly for the benefit of the patient or otherwise, but I do

think we should be pleased to find that such a thorough type of work is being done in a public institution such as the State Sanatorium for tuberculosis. I am glad that Dr. McBrayer has brought to us not only the type of work that is being done, but also some data giving the number of these examinations, which shows that it is a routine thing and is carried on in all cases. The principal thing we want to keep in mind is the high character of work that is being done in an institution in North Carolina for the treatment of tuberculosis. There is a thoroughness in the work which you would find difficulty in finding equalled in many state institutions. I am glad, particularly at this time, to see the excellent work being done in our own State Sanatorium, an institution which has been under fire. It is a matter of congratulation that we have an institution which is doing such excellent work, and I think it is a good thing, perhaps, that the institution is under fire, because it gives an opportunity to show the high character of the work that is being done there which is equal, I think, to that being done in any other state institution in the country. Most of you know that I have been intimately connected with the work in tuberculosis, not only in a private capacity but in a national way. Some years ago it was our custom, when a question was asked about our State Sanatorium, to sidestep it, but now we are glad to speak of its work, and I say this as a man in close touch with the work being done in tuberculosis all over the United States. We are doing excellent work in our institution here, and we want Dr. McBrayer to know that we are very proud of it.

Dr. McBrayer, closing the discussion:

I would like to thank Dr. Dunn for his kind words, and for his enthusiasm. While he may be a little over-enthusiastic, we can easily forgive him for this.

NORTH CAROLINA SECTION OF

MEDICAL VETERANS AND MEDICAL OFFICERS RESERVE CORPS, U. S. A.

Chairman: Joseph Howell Way, Waynesville, Lt. Col. Med-ORC.

The meeting was called to order by the Chairman, with the following medical officers present:

Jos. H. Way, Waynesville, Lt. Col. Med-ORC.
Joshua F. Abel, Waynesville, Maj. Med-ORC.
John W. MacConnell, Davidson, Lt. Col. M. R. C., U. S. A.
M. L. Townsend, Charlotte, Lt. Col. Med-ORC.
James B. Bullitt, Chapel Hill, Maj. Med-ORC.
W. L. Dunn, Asheville, Col. Med-ORC.
George E. Barksdale, Oteen, Maj. Med-ORC.
D. C. Absher, Maj. M. C., U. S. A.
Robert T. Ferguson, Charlotte, Maj. Med-ORC.
Coite L. Sherrill, Statesville, Lt. Col, Med-ORC.
Irving E. Shafer, Salisbury, 1st Lieut. Med-ORC.
Wm. M. Scruggs, Charlotte, Capt. M. R. C. (Emergency).
R. McBrayer, Sanatorium, Maj. Med-ORC.
Louis G. Beall, Black Mountain, Maj. M. R. C.
John W. Long, Greensboro, (formerly) Lt. Col. M. R. C., U. S. A.
J. Vance McGougan, Fayetteville, Surg. Genl. N. C. N. G.
Eugene B. Glenn, Asheville, Maj. M. C., N. C. N. G.

CHAIRMAN'S REMARKS

Lt. Col. Joseph H. Way, Med-ORC., Waynesville

Gentlemen of the Newly Authorized Section of Medical Veterans and Medical Officers' Reserve Corps:

At the meeting of the Tri-State Medical Association at High Point, in February, Dr. Long, President of the State Medical Society, and myself, in discussing different matters of professional and personal interest in connection with this meeting, considered the advisability of instituting some measures or means whereby two purposes could be accomplished: First, to preserve as much as might be possible in the annual volume of the transactions of the State Medical Society all record of what North Carolina doctors did, where they worked, how they worked, some of the results of their labors during the World War; and secondly, believing as we do in preparedness, we believe it an excellent idea to foster the Reserve Corps and some method that would also keep the Medical Officers' Reserve Corps a live subject, and bring it occasionally to the attention of the average North Carolina doctor.

To accomplish those two purposes it was decided to organize a new section to be entitled "Medical Officers of the World War, Veterans and Reserve Officers," combining the past, present and future, including the medical men, of course, who were in the army and navy, and then the new men who go in the Officers' Medical Reserve Corps who become members after the war.

The matter was taken up, and Maj. D. C. Absher, M. C. U. S. Army and a loyal son of our state, very kindly threw himself into the breach, and to his credit is due, in the main part, the little program that we shall have today. One of the items, that of Mr. House, of the State Historical Commission, for instance—and I am sorry that we are not having that this morning! But Mr. House came here two days ago, and his address was delivered before a large and appreciative audience in this hall two evenings since. Mr. House says that the only material for the construction of the history of medicine in North Carolina or of medical men available in the State Capital is a set of the bound volumes of the North Carolina State Medical Society's Transactions.

Now, gentlemen, we want to get our part in that record. We have made the record, and we want to see that it is preserved. And I know of no better means than to preserve it in this Section. We ought to have this section convene every year, have papers on the subjects of military medicine and surgery, and the many topics of medical practice which those of us who have had personal contact with the army or navy, medical service know must be a part of the mental armamentarium of the doctor who would render his best aid to his country in time of war. This section will also afford a convenient and much needed clearing house for the consideration of the concerns of the doctors holding commissions in our State troops and the National Reserves.

In this connection it will be of interest to you that I recently addressed a letter to the Surgeon General's office, desiring detailed information as to the medical officers from North Carolina serving with the colors during the World's War, and received the following reply:

War Department

Office of the Surgeon General
Washington, D. C.

March 31, 1923.

Lt. Col. Joseph H. Way, M. R. C.,
State Board Health,
Waynesville, N. C.

My Dear Colonel Way:

The Surgeon General directs me to acknowledge receipt, by reference from the Adjutant General of the Army, of your letter of March 27, 1923.

In reply, I regret to inform you that there are not available any pamphlets or other data bearing on the subject of the Medical Reserve Officers' service in the World War, nor has this office prepared a list showing the names of the medical officers who served during the war. The inadequacy of the clerical personnel assigned to this office since the War has prevented the compilation of much desir-

able data. However, in view of the fact that the reserve officers so greatly outnumbered all others of the approximately 30,000 medical officers serving in the War, it might well be said that the record of the work performed by the Medical Department is largely history of the achievements of the reserve officer."

In other words, gentlemen, if the Medical Department of the grand old U. S. A. was a success, during the World War, that service is to our credit; or if it was a failure, that failure is the record of our discredit.

The records show that the following Medical Reserve Officers in North Carolina died in service during the period of hostilities:

	Cause of Death
Maj. James Williamson Squires, Charlotte	Disease
Capt. John Edwin Ray, Raleigh, N. C.	Wounds in action (Cited for special act of bravery)
1st Lt. Presley Robinson Brown, Swepsonville, N. C.	Killed in action
1st Lt. Stephen James Hawes, Dover, N. C.	Disease
1st Lt. Marcus Calvin Hauser, Charlotte, N. C.	Disease
1st Lt. Hugh Tate Moore, Wilmington, N. C.	Accidental
1st Lt. Walter Phillips Smith, Midland, N. C.	Disease

Very truly yours,
M. Ashford,
Major, Medical Corps."

It is my purpose, gentlemen, from time to time to continue myself, and I am going to ask each of you to try to acquire anything bearing on the medical service in the World War, of Carolina doctors, bring it to this section, and get it into the records, because you and I know, and the War Department knows, and everyone knows that our record in this War was one of which we have every reason to be proud. Notwithstanding the calls that went out for medical men, I think I am safe to say that at no time was there any lack of medical men, throughout the country in general and especially in North Carolina, ready and willing to perform their part in helping the nation on in its great work.

Now, gentlemen, as I have just evidenced to you, the Chairman has no formal address, and the work of the program will begin at once.

The second item on the program is the "Medical Man and National Defence"—Maj. D. C. Absher, M. C., U. S. Army. Major Absher presented this subject last night*. It was not discussed at that time, and if it is the pleasure of Major Absher I shall ask him to make a brief reference to his address, with a view to inviting discussion.

Maj. D. C. Absher, M. C., U. S. Army:

I don't know exactly what reference I can make to the paper that I read last night without going over the entire paper. It was brief and condensed as it was. I thought, perhaps, that some reserve officer might be present not acquainted with the regulations for the Reserve Corps Officers, in connection with promotion or appointment, or anything else on that line. I repeat, if there are any points that any reserve officer or

*See page 79.

former officer would like to have cleared up in connection with appointment in the Reserve Corps, or with promotion, I will be glad to answer the questions that anyone might ask.

UNCINARIASIS, A COMPLICATION IN TUBERCULOSIS, AND ITS TREATMENT

George E. Barksdale, Major, Med-ORC

United States Veterans' Bureau Hospital No. 60, Oteen

The hookworm disease is too well known to more than mention its frequency and its ubiquity in all warm and semi-tropical, and even temperate regions; but until six months ago the writer had no personal experience in its diagnosis and treatment. Since then he has treated twenty-one patients with it, after the method he will later describe.

After Ashford's investigations in Porto Rico this disease was brought forward as one of the chief causes of death in that island, and was estimated to have caused as high a mortality as 30 per cent.

The parasites do not infest all human beings alike, and it appears that the white race is more liable to infestation, the percentage being 71 of the total infested in some areas, 51 per cent of mulattoes, while the negro race are infested to the extent of 41 per cent.

As is well known, the blood changes are characteristic, the average being the reduction of the red cells to 1,776,000 and the haemaglobin to 21 per cent, the average increase of eosinophiles being 10.3 per cent, while this has gone to 66.2 per cent in extreme instances. In the cases treated by the writer, the percentages of eosinophiles varied from 1 to 9. The anemia present in the cases was not unusual, and it was difficult to determine just how much was attributable to tuberculosis and how much to hookworm.

Nor was the infestation pronounced enough to produce sufficient symptoms to warrant investigation for uncinariasis, other than the usual routine examinations for these, and other parasites.

Until recently the oil of chenopodium and thymol were used as parasiticides, but because of several failures, and the disgusting and nauseating effect of the oil and its severe and alarming effects, other means were sought of eradicating the parasites.

In an article written by the Zoologist of the United States Bureau of Animal Industry, Dr. Maurice C. Hall, and published in the Journal of the American Medical Association, for November 19, 1922, he gave accounts of his experiments upon dogs. Thirty dogs were used and all were infested with hookworm. The medicament used being carbon tetrachloride. He gave it in doses of .3 c. c. for each pound of body weight of the dog, and a dog of twenty-two pounds was given 3. c. c. The result was that the parasites were all expelled in each instance. Previously he has tried the usual remedies, such as thymol, oil of chenopodium, and chloroform, and a combination of the latter two, with nothing comparable to the result obtained by the use of the tetrachloride.

Expulsion of the worms was likewise complete when a mixture of 1 c. c. of oil of chenopodium and 3 c. c. of the carbon tetrachloride was used. Whether this was attributable to the tetrachloride or to the oil was not stated.

However, the tetrachloride of carbon seems not so effective in the treatment of ascarids, as either santonin, or chenopodium.

In a previous article by Dr. Hall, in the Journal of Agricultural Research, in 1921, he mentions the attention that had been given carbon tetrachloride in the past. It was discovered in 1839, and about fifty years ago was used by Drs. Sanon, Simpson and others as an anesthetic. Simpson thought it more depressing than chloroform to the heart, and it had been used by Pretheroe Smith to overcome the pain of tic doulloroux, for aching teeth, and in labor. One death was caused after using it 30,000 times in a London hair dressing establishment.

Inhalation has produced poisoning in a girl who had to work in the fumes of the paint used in painting golf balls, in which this substance entered as a constituent. Frequent inhalations have had a tendency to produce a toxic jaundice.

Doses of 1.5 grams per pound of body weight did not produce necrosis of the liver cells in dogs, but .3 c. c. of chloroform per pound of body weight did. One of the dogs was given a c. c. of the tetrachloride for each pound of body weight, and it lived for eight months, and was killed in connection with another experiment.

Experiments on monkeys proved that as much as twelve cubic centimeters of the tetrachloride produced no apparent ill effects, except that one or two ate less than usual. They were held for a month and then used in other experiments.

Doctor Hall, himself took 3. c. c. of carbon tetrachloride, and at the time of taking had a pulse of 90, forty minutes later his pulse was 78, his blood pressure was not taken, though apparently it was normal.

He did his work as usual. He felt a sense of warmth in his stomach, though no burning, and he had occasional eructations that smelled of the medicine. It might be mentioned here that following the use of such remedies as the oil of chenopolium and thymol, as well as in the case of oleoresin of male fern, the patients be given no oily food, nor alchololic preparation, as these will readily dissolve them, and too rapidly cause their absorption by the stomach.

Thymol and the oil of chenopodium are not all that is to be desired in the way of remedies by any means, for a potent dose of thymol is dangerous, and the oil of chenopodium is so disgusting in odor, and nauseating as well, that it is absolutely detrimental to the patients who have pulmonary tuberculosis.

The properties and characteristics of carbon tetrachloride have been gone into detail to this extent for the reason that there is some danger in using this likewise; but, it is safer and a better means of ridding the system of the parasites than any other so far used.

Dr. S. M. Lambert, Medical Officer, Bureau of Ankylostomiasis, Colony of Fiji, in an article in the Journal of the American Medical

Association, December 16, 1922, gave results in the treatment of 20,000, supplementing this in an account later in the same journal in which 50,000 were treated.

The usual dose given was 3. c. c., following it usually a week later with 3. c. c. of oil of chenopodium as a check to see if the first was effective. The first dose in the series of experiments brought away 244 parasites, and the dose of the oil a week later only brought four more.

Thus, an effective result of 98 per cent.

In two other cases 185 and 528 parasites were brought away when 4 c. c. of the tetrachloride was given, a percentage of 97.

The patients who took the remedy felt sleepy for several hours, and a few had headaches. In the statistics of the 50,000 treated three proved fatal, and these showed at autopsy, necrosis of the liver, and these were small children.

Of the 20,000 first treated, 1,000 were Europeans, 6,500 were natives of India, 13,000 Fijians. Original examinations with the microscope showed the infestation to be 89 per cent of Fijians and 93 per cent of Hindoos.

Of 823 persons treated 72 were found still infested, or a percentage of 91 cured.

The economy of the treatment is one of its great advantages, as this was obtained for about 9 cents a head.

Several remedies have been used in the past. Thymol in doses of 1 to 2 grams, oil eucalyptus and chloroform mixed in doses of 2 or 3 c. c.; oil chenopodium 2 c. c.; betanapthol 2 grams; but, none of these are free from one objection for one reason or another.

Before the use of the tetrachloride by the writer, he had used thymol and the oil of chenopodium, but since the best method of administering these is to deprive the patient of food for twenty-four hours, and in meantime purge him briskly with Epsom salts, it was rather a harsh method for one affected with tuberculosis, and in several instances treatment had to be deferred, for it was considered unsafe to give either of them. Several patients had been given repeated doses, or treatments, with both the oil chenopodium and thymol, and the reports from the laboratory would be returned positive, until it was doubtful if a cure would have been effected by the use of either of them.

On January 2, 1923, the writer took 3 c. c. of carbon tetrachloride divided into four doses, and put in four number 0 capsules, and these were sealed by dipping the caps of the capsules in water so that the brims only were wetted, and sealing the liquid by placing the caps on after filling the lower part of the capsule with a medicine dropper. These capsules were taken every hour, after a light breakfast. No inconvenience was felt, pulse at the time of taking was 84, and was not taken again, a sense of warmth was felt in the stomach, and eructations of the substance could be tasted, but that was all, and no ill effect was noticed.

On January 4, 1923, a patient was given 3. c. c. in the same manner, he had a purge of 30 c. c. of saturated solution of Epsom salts at 8 p. m. the night before, a light supper, and a light breakfast the day of treatment. He was given the tetrachloride every hour in 3/4 c. c. doses until 3 c. c. were taken. At 1 p. m. 15 c. c. of solution of Epsom salts was again given. The result was he evacuated one parasite, *Necator americanus*. The treatment was later repeated, and his feces were free of parasites and ova after eleven days. This patient had five treatments in all. Two of these were with oil of chenopodium and one with thymol, and the latter two.

Since the first administration of the tetrachloride twenty-one patients have been treated with it. Only one had three treatments, three had two, and one was discharged from hospital before it had been proven that he was cured.

RELAPSES

Sisco, in an article in the Journal of the American Medical Association, for February 17, 1923, mentions the result of a survey of 1,234 patients who had been treated in the Windward Islands of the British West Indies.

This was on the island of Antigua. The treatment was carried out in 1915-1917, and of the 1,234, 262 were found to have been reinfested, while 300 who were free of the parasites at the time of the treatment, were infested at the time of the survey.

DISCUSSION

Col. Wm. L. Dunn, Med-ORC, Asheville:

I feel this paper should not go by without discussion at the meeting of this Section, whether we have anything to bring worth while or not. I believe that the life of a section is probably quite as much dependent upon the discussion as it is on the paper. I don't know that I can say anything of particular interest, but I feel it should not go by.

I sometimes think that after all of the propaganda and enthusiasm one way or the other, we have perhaps forgotten about hookworm infection, and it is going by the board. I can only say that in my own work it is a rule to examine the stools of every patient who comes south of a certain line. There is also an examination made of the past life of the patient. I don't know that I can discuss the treatment, but it is an exceedingly important thing. One thing we must remember, and that is the hookworm disease is often mistaken for early tuberculosis. This is a thing that is of such vast importance to those who are treating tuberculosis, that we should not forget that routine examination of the stools should be a part of the examination.

Maj. R. McBrayer, Med-ORC, Sanatorium:

On yesterday we reported on the laboratory work of the State Sana-

torium. That report showed that 1,143 cases had been admitted in the last three years. We found four years ago, in approximately three hundred admissions, that ten per cent of them showed hookworm in the feces. The average of the four years, meaning over 1,000 cases, showed six per cent hookworm infection. The care that a patient gets while undergoing treatment for hookworm disease should be emphasized. That patient ought not to be starved any more than necessary, or purged any more than necessary, on account of the devitalizing effects.

For those reasons we had employed all three of the methods mentioned by the writer, but we gave only one treatment. We made the patient eat a light supper and no breakfast, but no matter what else he gets we give him hot skimmed milk for breakfast. That's all he gets until the completion of the hookworm treatment.

I think the stand that Colonel Dunn takes is quite correct.

One other point, in nearly twenty-five per cent of our series of forty cases that we have recently studied, we have found the basal metabolic rate from fifteen to twenty per cent below normal.

Should we not ask the question, isn't there less thyroxin in the individual cells of the body than normally should be present? One answer may be that the patient may have hookworm disease.

It may be and I think I have seen some cases that are getting thyroid gland by mouth when they should have been getting oil of thymol.

MAJ. JAMES B. BULLITT, Med-ORC., Chapel Hill:

My attention was called by Dr. Dunn to the fact that of late years we have begun to neglect the information we obtained a few years ago in regard to the importance of hookworm.

As far as my observation and experience with the doctors in this State goes, in the last few years there has been very little attention paid to the presence of hookworm, and I think a good many of them fail to realize the wide prevalence of that disease. I think the actual amount, in fact, is just as large as it was fifteen years ago.

About fifteen years ago, in Mississippi, among the college students, I saw about thirty per cent of infection. In the last three or four years I have examined two classes of medical students at the University of North Carolina and found about six or seven per cent infected. The amount among college students probably would be less.

I think the figure given by Dr. McBrayer, ten or fifteen per cent, is rather low for this State.

There is not a strict relationship between the number of worms and the amount of disease, though there is, of course, a general relationship.

A SIMPLE APPARATUS FOR PHOTOMICROGRAPHY

Maj. James B. Bullitt, Med-ORC, Chapel Hill

Every laboratory worker desires at times to make a photographic record of some of his microscopic preparations. Many are deterred from doing so by reason of the costliness of the usual photomicrographic apparatus and also by the difficulty the novice experiences in obtaining satisfactory pictures with such apparatus. A moderately good camera of this kind costs about one hundred dollars ($100.00) and a really fine one costs several times this amount. Even with a good camera the novice or occasional photographer finds two serious obstacles. First, it is difficult to be sure when the image is accurately focused on the ground glass and many failures result from imperfect focussing. Secondly, many pictures are blurred by slight jarring of the apparatus, as may occur from some one walking across the floor during the exposure.

The apparatus here demonstrated was made from the scraps of a few old packing boxes, the shutter from a worn-out kodak and a piece of black serge cloth. It required about two hours to make it. The cost, including the kodak shutter and the incandescent electric lamp, was less than five dollars ($5.00). Two or three minutes suffice to set up the apparatus and take a picture. The image is focussed upon a white paper screen instead of upon ground glass. It is as easy to determine an exact focus as it is in looking through the microscope at the actual slide. Anything short of violent jarring during the exposure does not blur the picture. The accompanying photo micrographs illustrate the quality of work that this crude device will do. These plates were taken in my laboratory while my students were in the room, moving about in the course of their regular work. Nevertheless the pictures compare fairly well with those taken with an expensive camera.

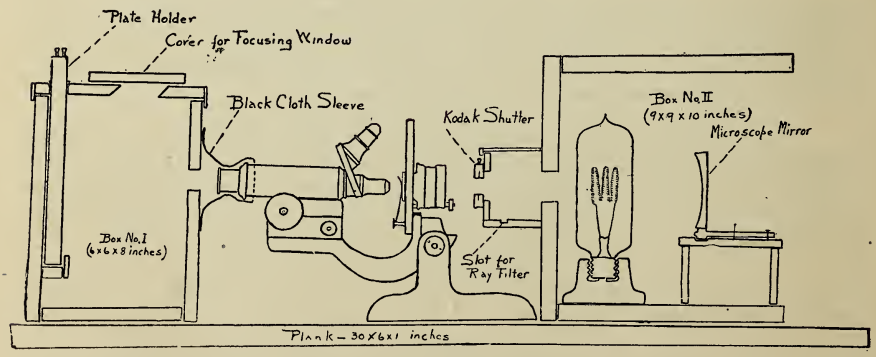

PLATE NO. 1

The ordinary laboratory microscope, with its tube tilted to the horizontal position, is set upon a thirty inch plank. Box No. II is placed behind the microscope as shown in the illustration (Plate No. 1). An incandescent lamp with *concentrated filament,* the type used in stereopti-

cons, is screwed into a socket in one of the front corners of this box. The microscope mirror is taken off and placed upon a small stand or table inside this box, the *concave* side of the mirror facing the electric light. A nail or tack through the screw hole on the mirror bar will hold it in position. The height of the table bearing the mirror and the elevation of the electric bulb must be such that the beam of light concentrated and reflected by the mirror will throw through a one inch opening in the front of the box into the Abbe condenser and through the tube of the microscope. The distance from the mirror to the light should be about two and a half to three inches, that is, about the focal length of the mirror. (Plates No. 1 and No. 2).

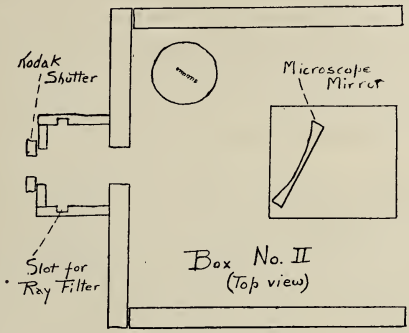

PLATE NO. 2

On the front of Box II a small trough is attached in which ray filters may be placed as one places microscopical slides in a slide box. On the front of this the kodak shutter is fastened (Plates No. 1 and No. 2).

Box No. 1 is placed in front of the microscope. A hole, about one inch in diameter, is in its front wall, in alignment with the microscope tube and the light beam. One end of a black cloth sleeve encircles this opening and is tacked snugly to the box. The other end of the sleeve receives the ocular of the microscope. A draw string at this place gives a light proof connection. In the top of this Box, at the back, is a slot, through which the ordinary plate holder may be inserted. This must be a snug fit. In the top of the box, near the front, a window, two by three inches in size, is cut. A piece of white paper is pasted upon an old photographic plate. This is put in the plate holder, which is inserted in the slot in Box No. I. It is desirable, though not absolutely necessary, to blacken the whole interior of Box No. I. This may be done with ink or paint or by pasting the ordinary black paper that comes with photographic plates.

The image of the microscopical preparation is projected upon the white paper screen in the plate holder. The photographer looks through the window in the top of Box No. I and focusses both the Abbe condenser and the microscopic tube. With a very little practice one learns to secure an accurate focus very quickly. When the focus is obtained, one closes the kodak shutter, removes the plate holder and substitutes

for it a plate holder containing a plate, covers the observing window with a small piece of plank, draws the slide and snaps the kodak shutter for the desired exposure.

By varying the untero-posterior dimension of Box No. I, one may take pictures of any size desired. The dimensions indicated in the accompanying drawings give pictures of four inch diameter. The lamp I have found most satisfactory is one of two hundred watt strength. The length of exposure will of course vary with the degree of magnification, the strength of the light, the density of the filler used and the thickness of the microscopical preparation. Taking the four inch photograph of the average microscopical slide and using the two hundred watt lamp, I find the following exposures satisfactory for the most frequently used magnifications:

10 x ocular, 16 mm. objective ----------½ second

10 x ocular, 4 mm. objective ---------- 2 seconds

10 x ocular, 1.9 mm. objective ---------- 6 seconds

It is needless to say that this simple device does not aspire to replace the expensive photomicroscopic camera. However, its cheapness and the simplicity of its operation together with the good results obtainable with it, make it more satisfactory than the regular camera in the hands of the inexperienced or in the hands of the man who merely desires to take an occasional picture. Any one who can use a hammer and saw with facility can make it. The only point requiring special care is the securing of accurate alignment of the mirror, the shutter, the microscope tube and the opening in Box No. I. When the apparatus is set up for the first time it may require some considerable manipulation to adjust the mirror to its exactly proper location and to learn the proper focussing of the Abbe condenser. But after doing this once the position of the mirror can be indicated by pencil marks in Box No. II and one easily remembers the focussing point of the Abbe condenser. Subsequently it will require but two or three minutes to set up the apparatus and take a picture.

RECENT OBSERVATIONS AND ADVANTAGES OF THE RUBIN TEST FOR STERILITY

Maj. Robert T. Ferguson, Med-ORC, Charlotte

Some one has said that there is nothing new under the sun, but when Dr. Rubin developed his insufflation test for proving the patency of the fallopian tubes he made a revolutionary advance in the treatment for sterility, and in future there will be no excuse for any operation for its correction until the patency of the tubes has been tested.

Why curette the womb, split the cervix, dilate or insert pessaries when the tubes are permanently occluded from inflammation, adhesions, tumors or cysts? I recently spent some time with Dr. Rubin in New York, and the demonstration of his method was unique. He told me that he had made the test in 1,000 cases without any untoward result

whatever and with no danger to the patient. The test requires only a few minutes and as a rule the only inconvenience felt by the patient is a fleeting pain in the right upper abdomen and under the right shoulder. Dr. Aldridge, of the Woman's Hospital in New York, has also used this test in over 800 cases with the same excellent results as has Dr. Rubin, and I am indebted to both of these gentlemen for the consideration shown me and for the large number of cases which were demonstrated in my presence.

The value of the test lies in the fact that you can readily determine that both tubes are either occluded or that at least one is patent.

In these tests oxygen was first used by Dr. Rubin, but he found that this was very slow to absorb. Consequently he began using carbon dioxide and has found this much more satisfactory, as it is readily absorbed and the shoulder pain is greatly limited in extent. The patients are allowed to maintain the recumbent position for from ten to fifteen minutes following the operation and are then permitted to continue their usual routine without further discomfort.

Air has been frequently tried in these tests and Dr. Jacoby, of New York, reports forty cases in which he has used air, with the result that he finds it causes the pain in the upper abdomen and right shoulder to last longer and with diminishing intensity for about two days. Therefore for this reason, if for no other, I would prefer the use of carbon dioxide gas, as the inconvenience from the latter is only temporary.

The apparatus necessary for this test consists of a tank of carbon dioxide gas with a good needle valve so that you can get an even and steady flow of the gas; a flow volumeter to register the quantity of gas introduced; a mercurial manometer, of which a Baumanometer or any other good blood-pressure instrument is very satisfactory, to register the pressure of the gas as it flows into the uterus; a Keyes-Ultzman syringe with a few extra holes bored near the tip, with a rubber urethral tip slipped over this end for an inch and a half or two inches on the shaft; enough rubber tubing to make the connections; a bivalve speculum and a tenaculum. A release valve such as is used on the ordinary sphygmomanometer is useful for releasing the gas without removing the syringe. The instruments should be sterilized and the cervix painted with iodin.

The usual amount of pressure used for the test ranges from 120 to 200 mm. of mercury with the latter figure as a safe limit in any case. As a rule it requires a lower pressure in thin women than in the fleshy. When the gas passes through the tube at anything less than 100 mm. it is considered a normal tube.

Probably the best time to make the test is about one week following the menstrual period and from that time to within a few days of the next period. Three different tests should be made at intervals of from ten to fifteen days before the tubes should be considered closed, as it sometimes happens that in a case where the gas has failed to pass at the first operation it will go through at a later test.

There are a few contraindications to the test which I think worth

while mentioning, such as acute pelvic conditions, acute gonorrhea, menstruation, large masses in the pelvis with or without fever, cardiac diseases, and pregnancy of course.

We have all had patients to become pregnant following some of the various operative procedures done for the relief of sterility, and we have all had failures. In the light of our present knowledge we are not justified in requiring our patients to submit to any unnecessary operation or any operation at all until we have demonstrated the patency of the tubes.

DISCUSSION

Lt. Col. John W. MacConnell, Med-ORC, Davidson:

I have only one criticism to make about the paper, and that is that it is too good a paper to be read before such a small section as this. None of us did any work of that kind while we were in the army service, of course, but that was an excellent paper and should have a prominent place on the program for the Section on Gynecology. I have read of this Rubin test, and I thought the paper was very interesting, although I know nothing of that line of work. The Doctor is to be congratulated upon his paper.

Lt. Col. Jos. H. Way, Chairman:

The next paper on the program is that of Col. Chas. O'H. Laughinghouse, "Why a World's War and Medical Veterans' Section?" Colonel Laughinghouse had to leave for home, and this paper was delivered before a large and appreciative audience at the first meeting of the session.*

MILITARY MEDICINE AND THE MEDICAL OFFICERS' RESERVE CORPS

Maj. J. F. Abel, Med-ORC, Waynesville

To the average physician in North Carolina who is quietly pursuing the even tenor of his way, the introduction of a military subject to this Society may seem out of place. It is something new. So was our recent service in the great World War. So new, in fact, was this service that some of us, on being ordered to report for duty, so the story goes, hurried into uniform, fastened our puttees behind, and on arriving at a camp in a rainy season were told by some kindly soul that if we would just step around to the Quartermaster he would issue umbrellas to the officers, and we stepped around. Yet in going over the pages of the history of the World War one can easily see that the high type of military morale developed and maintained by the personnel of the Medical Corps had largely to do with the victories won by our armies. Military medicine includes Military Hygiene, Military Sanitation, Military Surgery, Medico-Military Administration, Medico-Military Transport, Recruiting, Sanitary Formations, and Training. Military Medicine has two aspects, professional and administrative.

The history of military medicine is of great antiquity. Some insist that it began with the practical ideas of Moses of sanitation and hygiene

*See page 49.

while leading his people during the Exodus. Later, in the writings of Josephus, we find the military surgeon taking on a more definite character. Here he is extracting arrows and binding up wounds. Still later, in the well organized armies of the Greeks and Romans we find the military surgeon contributing largely to their efficiency. Since this time to the present no branch of military science has made greater or more rapid strides than military medicine and surgery. During the World War there was no class of men, in my humble opinion, who made as great a sacrifice as did the doctors, and I am sure there was none who did it more cheerfully. There is no class of men in the United States who can appreciate more fully than the doctors the necessity of preparedness. The United States Government, under great stress of circumstances and by a lavish expenditure of money, trained a large per cent of the medical profession in military medicine and surgery. Now, at a nominal cost, a great amount of this preparation can be conserved by a well ordered and well provided for Medical Officers' Reserve Corps.

The first duty of the Military Doctor is to preserve the strength of the forces in the field. Second, the care and treatment of the sick and injured at the front, in the communication zone and in the zone of the interior. The specific duties of the medical department of present-day armies are the initiation of sanitary measures to insure the health of the troops; second, the direction and execution of all measures of public health among the inhabitants of occupied territory; third, the care of the sick and wounded on the march, in the camp, on the battlefield and after removal therefrom; fourth, the methodical disposition of the sick and wounded so as to insure the retention of the effectives and relieve the fighting forces of the non-effectives; fifth, the transportation of the sick and wounded; sixth, the establishment of hospitals, dispensaries, and other formations necessary for the care of the sick and wounded; seventh, the supply of the material necessary for the prevention of disease among the troops and the care of the sick and wounded; eighth, the preparation and preservation of individual records of sickness and injury in order that claims may be adjudicated with justice to the government and to the individual.

The splendid men who are now active in the organization of the Medical Officers' Reserve Corps are showing the same spirit that was shown at the camps at home, the campaign over seas, the return and the muster-out. I would urge that the United States Government make ample provision that these men may complete the building up of the organization of the Medical Officers' Reserve Corps that will be in keeping with the other splendid institutions of the greatest Government on earth. And, speaking for the medical profession generally and for North Carolina in particular, I wish to say that the profession will give the Medical Officers' Reserve Corps hearty support. We will step in line and hold the torch in a way that our fallen comrades will sleep in peace "in Flanders field."

Lt. Col. Joseph H. Way, Med-ORC, Chairman, Waynesville:

We had expected Col. Arthur T. McCormack, President of the Medical Veterans of the World War, to be present with us this morning, but a specially called meeting of the State Board of Health of Ken-

tucky, of which he is the active officer, prevented his being with us today, much to our regret. He wished me to say to those of the gentlemen present who are not enrolled members of the Medical Veterans of the World War, that if they will inform him, he will have it attended to for them.

THE TUBERCULOSIS EX-SERVICE MAN AND THE MEDICAL RESERVE CORPS OFFICER

R. McBrayer, Major Med-ORC, U. S. Army, Sanatorium

The title of this paper probably causes you to recall the many articles and discussions that have come before the medical profession since November 11, 1918. Hardly any of these ideas, plans and teachings have been based on experience with this specific problem, therefore they have at times been unpractical, flighty, idealistic and militaristic; even some writers have wanted us to attempt the impossible, the latter being all the way from virtually no care at all for the tuberculous ex-service man to plans that were obviously impossible. The guiding hand of such men as our Colonel Bushnell, Dr. Lyman, Dr. L. B. McBrayer, Surgeon General Cummins, and many others, has been felt during these four and a half years, and retrospection now allows us to visualize their ideas as material buildings, definite policies, and good results. The unlimited amount of criticism (mostly the most damning of all criticism—destructive criticism) directed against all parties and peoples concerned with the problem (and such a word is most properly used) of handling the tuberculous ex-service man has come from those who could not appreciate the psychology of all concerned, and who knew nothing of the factor of time in the solution of and the necessary material equipment for handling this immense business, for it is no less than a gigantic undertaking, which, unfortunately, did not even have a prototype in the medical world.

The writer desires to have this contribution considered as one based on our four and a half years' experience, which, when properly analyzed and catalogued, becomes knowledge of our problem, therefore let us discuss some of the individual obstacles or hindrances that have been met, appreciated, and in general correctly surmounted.

1. *Obviously the diagnosis.* Let me remind you that this was peculiarly difficult for all except the very few true specialists (and they had their misgivings about many cases). This difficulty existed because of (1) a very recent epidemic of measles and influenza, (2) the warfare gases, (3) the inevitable war neuroses, and (4) the now recognized compensation complex. The medical men of this age have never been confronted with such difficult differential diagnosis as we had in this ex-service man. Necessarily then, many of them were not diagnosed tuberculosis until they had been sick with it several to many months. This, of course, resulted in much dissatisfaction in the ex-service man and the layman, as well as the doctor.

I feel sure that society is being and will continue to be amply repaid for any loss accrued by the unpreparedness of the medical profession in

this work, because these trying and most difficult diagnoses have been true and lasting stimuli to the medical profession, with the result that the differential diagnosis of incipient pulmonary tuberculosis is more completely, scientifically and accurately determined now than it would have been in many more years had it not been for this virtual baptism of fire. So the net results in diagnosis are decided assets to the layman, the ex-service man, and the medical profession.

2. *Treatment.* For discussion we can divide this into its three essential components. (1) A tuberculous ex-service man who truly wants to get well. (2) Proper diagnosis (or diagnoses, as is more frequently the case) and treatment. (3) A place (sanatorium) where these may be accomplished. This absolutely necessary triad can truly be likened unto the proverbial chain whose strength (power for accomplishment) is no stronger than its weakest link.

(1) A tuberculous ex-service man who truly wants to get well. Here the patient's lack of knowledge of the requirements for this task resulted in our having very few patients who appreciated the long drawn out years of self-denial, sanatorium treatment and after care necessary for the accomplishment of the task. In other words we had very few patients who, from a standpoint of prognosis, were good patients. Appreciating this difficulty early in our efforts, its correction was promptly undertaken. This could only be corrected by education of the patients. In that getting well of tuberculosis is such a difficult, monotonous, and long endeavor, requiring most rigid self-discipline (which in itself frequently requires re- if not complete education of that very evasive mental faculty, the volition), many hours of the "blues" and homesickness, undreamed of tenacity, and, withal, an optimistic temperament—on the patient's part. Obviously this education could not be acquired in less than a few years. It is to be regretted that many of our ex-service men demanded that they go to the school of experience to learn these requirements, rather than learning them from such eminent teachers as our own Dr. Ben K. Hays, whose equal as a teacher in this particular school probably does not exist. This school of experience I like to refer to as the devil's own school, because its net results are the untimely, obviously unnecessary, loss of life with its attendant economic loss and personal grief and heartaches. This particular group of patients was exceedingly hard to educate—either in the didactic and precept school or even in the devil's own school, because of two facts: (1) This group was composed of very viable, energetic and ambitious young men who were on yesterday practically America's flower; (2) they were in general accustomed to proper military discipline and control during war. This latter was suddenly removed with its consequent normal psychologic reaction thereto. The former was the antithesis of a sick man. Time—much time—was an absolute necessity in this education, though the citizens of our country so meagerly realized it that they became very impatient, even rebellious in many instances, and unmistakably placed the total blame for delay on the buildings and those directly and indirectly responsible for treatment and after care. Unfortunately the necessity for education was not limited to the patients. The home folks—the loved ones and the real, though ignorant, friends, soon became, at least

in numerous instances, the worst enemies the patients had. When this love and friendship was actively interested in the patient's welfare, he frequently left the hospital on ignorant, therefore virtually malicious advice; or, if he did remain where placed by the Government, he was disgruntled, dissatisficd, and many times took active steps to tear down what the Government had provided and planned to provide for his restoration to health and useful citizenship. This attitude and these acts are exactly opposed to those which are so essential to a favorable prognosis. Let me repeat that before we could get ex-service men well of tuberculosis we had to teach his loved ones and friends the absolute requirements for getting him well, or else, next to the patient, they remained his greatest enemies in his fight for life. Obviously this has required and even will require years, and in a very large degree the completeness of this education will show itself in cured cases of tuberculosis.

I must not leave this very important link in the proper care of the tuberculous ex-service man without asking you to substitute the words "American Legion" for the word "friends" in the preceding paragraph. I most earnestly agree with the majority of our national authorities in this particular line of medical work when they say that at many times and in many places the American Legion (including the national, state and local organizations) has most seriously interfered with the proper care of the tuberculous ex-service man, and thereby has been a real and active enemy to his life. This organization is a logical, proper and praiseworthy one, from which much material benefit has been and will be derived in numerous ways, though when it attempts to dictate or even suggest means and methods for solving problems about which it is densely ignorant, it is a greater power for evil than it ever can be for good. This causes me to repeat the line: "Oh! the dangers of an ignorant friend's advice." I repeat that a tuberculous ex-service man who truly and intelligently wants to get well is an absolute essential to successful treatment and care, therefore such a patient, and none other, is necessary for the proper accomplishment of this gigantic and terribly expensive problem—which in dollars alone is costing us a very large part of more than one million dollars per day.

Now to the second essential in successful treatment—namely, proper diagnosis or, as I said above, more frequently diagnoses, and the actual treatment of the case. Several factors militated against this accomplishment in the first few years following the armistice (which my ability to reason tells me—and I am not alone in this opinion—came before we had accomplished our mission). 1st: Specialists in this field were so few that hardly any were available for Government service, therefore they had to be made, and certainly no one can dare claim to be an authority in this field with less than five years' actual bedside handling of at least 100 cases daily, and that in a well regulated, well managed, completely equipped and properly staffed sanatorium. This meant that the tuberculous ex-service man could, by comparison, arrive at the conclusion that he was placed by the Government in a sanatorium where he was not getting as good a medical service as obtained in some other sanatoria. Obviously this bred dissatisfaction, though the conditions were not humanly avoidable. 2nd: The specialist in pulmonary tuberculosis is

relatively helpless without the constant aid of specially trained men in other fields, because frequently cystoscopy, the surgeon, the real internist, the laboratory director and others are absolutely necessary to the correct diagnoses and treatments very frequently seen as complications in pulmonary tuberculosis, and which at times so very closely simulate it that an incorrect diagnosis is not infrequently made, and as a result thereof the patient is treated for months for pulmonary tuberculosis when such actually does not exist. Only in the last few months I have seen the following diagnosed active pulmonary tuberculosis, when painstaking work and several weeks' observation have proved them to be non-tuberculous: carcinoma of pancreas with metastasis to lungs, chronic bronchitis, lung abscess, syphilitic pneumonitis, pulmonary infarct, bronchiectasis, unresolved broncho-pneumonia, non-specific pneumonitis, alveolar (root) abscesses, pernicious anemia, chlorosis, Hodgkin's disease, chronic cholecystitis, hyperthyroidism, chronic tonsilitis, tertiary syphilis with hypertension, hookworm disease, hematemesis in first few weeks of pregnancy, chronic sinusitis, chronic pyelitis, and actinomycosis. Obviously proper staffing and equipping of our sanatoria was very difficult—and necessarily required several years. This was because of several factors: 1st (as I have already stated), the very limited supply of trained men in this field; 2nd, the salaries were and are very meager compared to what men of this experience and caliber have as civil incomes; 3rd, probably an uncertain position; 4th, the red tape between this specially trained man and the necessary equipment, facilities and personnel for the full appreciation and realization of his ability; 5th, the very frequently changing administrations, bureau chiefs, etc., which were more or less menaces to his position and professional standing; 6th, because any patient could send in a complaint to his senator, the American Legion, and many others, thereby causing the specialist to be brought unmercifully and unnecessarily into the embarrassing limelight of unjust criticism where he had to defend his opinions and acts against the person who knew absolutely nothing about the subject he caused to be investigated. I say all honor and respect to such men as Dr. Montgomery, at Oteen, and many others who have braved what seemed at times the impossible, in an honest effort to give to the tuberculous ex-service man what he so richly deserves.

I need not remind you that the tuberculosis specialist has no smooth sailing in administering treatment. Very seldom do we see a patient who needs treatment only for his pulmonary lesion, and just here much experience, scientific training, and art are required—much more than the salaries offered can demand. By no means least of all, in fact, ranking near the first of the specialist's requirements comes the disciplinarian. Remembering the above mentioned psychologic reaction to discipline seen in the ex-service man, an exceptional, if not superhuman, doctor was required to handle these patients, and because, in many instances, where necessary discipline—so essential in the successful treatment of tuberculosis patients—has not been possible, the patient has died as a result, when his pathologic process was such that an absolute cure was the correct prognosis.

Now the third essential in treatment—namely a place where the

specialist, with his armamentarium, and the patient can get together under proper conditions. I am afraid that almost all of us had (and many still have) the very fixed, though erroneous, idea that marble halls, courtly entertainment, spacious sleeping porches, myriads of nurses, doctors and medicines, beautiful social service workers, taste-bud tickling banquets three times per day, and a neat financial income were essentials in the treatment of tuberculosis. At least the tuberculous ex-service man and his host of known and unknown friends demanded these things for him. I do not deny the place these things have in his cure-taking, but they are at least very subsidiary, and many of them not even needed. The lessons taught and examples set by that great Trudeau are correct today. Plenty of fresh air is essential, but it matters not whether we go on a sleeping porch to get it or have it come into a room to us through windows and doors. The feast three times per day is doubtless damaging, because years ago we learned the hurts of over-eating and forced feeding in all febrile diseases, and especially in one where gastric digestion and, doubtless, liver function are slightly to seriously impaired, and in which disease nitrogen balance is an important factor, rather than the additional and unnecessary respiratory ventilation which is demanded of one on a high potein intake, not to mention the colloidoclasia of Widal, and the resulting constant bombardment of the kidney with incompletely split, therefore foreign, proteins with its inevitable result.

I deeply regret that it is absolutely necessary that we have such large numbers of patients in one sanatorium, because intimate and very personal knowledge of and contact with the patient is decreased, as a rule, proportional to the number of patients. This logically results in the following psychology in the patient: I am not getting anything here that I cannot get at home, therefore I will do as well as home. Since I much prefer to be there, and can do just as well there, I'll leave the sanatorium to go home. To prevent this the ex-service man—even all tuberculous patients—must be able to visualize the medical service doing for him what he cannot get outside the sanatorium. Only the doctor who is an applied psychologist can successfully cope with this problem, which is one that is constantly and daily met with in this work, and which as a rule, is less in actual accomplishment the larger the sanatorium.

In the preceding pages I have attempted to stress some of the phases of the proper handling of the tuberculous ex-service man, as we now can appreciate them by experience and retrospection. Throughout, I have tried to stress the necessity for education which all parties directly and indirectly concerned must acquire before this work can accomplish for the tuberculous ex-service man its rightfully expected, therefore demanded, amount of success.

I hold that the Medical Reserve Corps Officer is in a most advantageous position to be a provider of this required education. He is at home with the loved ones and friends; he knows the home town ex-service man by name; he is living the life of a civilian, though officially connected with the medical service of the Federal Government; as a rule he is most sympathetic because he has soldiered with the ex-service man; he appreciates keenly the post-war psychology of these patients; he is a leader in his community; he appreciates the medical

side of this work; he is a voter; he knows, at least by his army service, the necessity for team work, with its many and various requirements.

I insist that we Medical Reserve Corps Officers are especially obligated to render this great and life-saving service to our tuberculous ex-service men.

DISCUSSION

Lt. Col. M. L. Townsend, Med-ORC, Charlotte:

This paper, it seems to me, brings up one of the most vital questions concerning the United States and its people today. It certainly is one of the biggest questions that I have had to contend with in western North Carolina. The records of all men who come to Oteen and who come to the other hospitals come to the subdistrict office, and I have had these examinations going on all the time ever since they came out of the service.

There are a tremendous number of these people who are not in a hospital, who are floating about, especially in western North Carolina because of its reputation. I think there are now, perhaps, in the files right close to one thousand who are not feeble men, who are not needing hospitals, but who are undoubtedly qualified to get out and take the training. Most of them are tuberculous. There are different ways of connecting disability with the service. Up until recently it has been an active condition within two years of the date of discharge. Right now there has been a change, and they may be examined by a board as to the length of time they have had certain activity. The Bureau requires definite evidence of this activity within this time. The examination of time of discharge does not show in this pathology.

They go to some doctor and he says to them, you have tuberculosis, and he tells them to put in a claim. Of course there are doctors and there are other doctors. There are some whose diagnosis is reliable, and some whose diagnosis is not. The Government says, "We must have a picture saying which of these is active tuberculosis." I want to ask you, when some of these men come to you and ask you to make a statement saying you have examined him within six months after leaving the service, please remember that you have to put a clinical picture down there to substantiate his having tuberculosis, saying that he had certain findings in his lungs, saying that he had temperature, something showing that he did have tuberculosis. That would help a good deal.

You speak of the trouble being with his friends. Right now I want to say this: I think the last letter I read from the central office in Washington stated that they are sending out a questionnaire through the subdistrict office asking the opinion of the medical men in the field as to the advisability of home treatment as against institutional treatment. I don't know what the results are going to be, as the question has just come up. It is just an inquiry which is now starting. The problem that comes to us is, a great many of the men say, "I don't want to go to the hospital; I am just as well off at home." And, of course, ninety-nine men out of a hundred of you know just what that means, what it is

going to be, until they drop off. Some of the doctors say, "I think he will be all right at home." But when it comes right down to the facts of the case, he is not well off at home, he can't be, he should be in an institution.

May I say just one thing? Help the men in your community to think of the aid of the Government in an honest way. I am sorry to say that all of these claims are not made honestly; some of these claims are evidently the claims of men who have chosen as their profession working the Government, just as I have chosen medicine. Of the four million men in the service, already one million, three hundred thousand of these men have made claims. Now, it seems hardly reasonable to suppose that one million three hundred thousand of these men were seriously disabled. So let us co-operate to the extent of giving the tuberculous ex-service man everything that can be given him, but not to encourage the other fellow to take the bread out of the man's mouth who is really in need of it.

Col. W. L. Dunn, Med-ORC, Asheville:

Mr. Chairman, this subject is one that is quite close to my heart. It is a subject very close to me because I have to serve in a rather big sort of position. I am on the Advisory Board of the Veterans' Bureau. I am the official national spokesman for the American Legion on all the questions on tuberculosis, and I am on the Board of the National Tuberculosis Association. I am saying these things only that you may understand that it is pretty close to my heart, and I have had a chance to see it from pretty nearly every angle.

First of all, I want to correct the statement of the Doctor about the questionnaire of the Bureau. The Doctor has inadvertently made a mistake about the establishment of service connection for the tuberculosis individual. The bill, up to a few weeks ago, provided that if any man developed tuberculosis within two years after the discharge from service, this would be accepted as evidence that the disability was developed during his period of service. In order to make that bill applicable to everybody, the Advisory Board was called to Washington to determine what would be competent medical evidence that tuberculosis had existed within the two-year period when a diagnosis had not been made. As evidence, first 20A and then subsequently 20B was issued, which, on the recommendation of the Board, contained this statement: That if any man had a minimum amount of tuberculosis it should be considered as evidence that tuberculosis had existed at least six months before. In other words, if made within two years and six months after the discharge, that would be considered evidence. That if he had at the time a diagnosis of a moderate amount of tuberculosis, this must be considered as competent medical evidence that the disease had existed at least nine months before the diagnosis. Therefore, if a diagnosis was made two years and nine months after the discharge, he came within the two-year period. If he was an advanced case, if it had come before one year—in other words, if he was diagnosed three years after the discharge, then he would come within the two-year period. Now, I am purposely stating six, nine and twelve months. In the latter part of January we asked that the provisions of the Sweet Bill be extended in tuberculosis patients to

three years. I went before the Congressional Committee myself and asked for this, and it was granted, but unfortunately, in writing the amendment, it stated specifically that a diagnosis must have been made by a licensed medical man, or by some of the Bureau, and it must have been made within three years after discharge, in order that a man who had not seen a physician within that period might benefit under the bill. In other words, that if a man had a diagnosis made within three years and six months of a minimum tuberculosis, that that should be considered compensable; that if he had moderate tuberculosis within three years and nine months, that that should be considered evidence sufficient for compensation; and that if an advanced diagnosis was made within four years that that should be considered sufficient evidence for compensation. Unfortunately, the legal adviser of the Veterans' Bureau has ruled that owing to the reading of the bill as at present, no such recommendation can be made, that the diagnosis must be actually made within the three-year period. There is no question now of having the Board sit any more.

Now, that is evidently unfair to the ignorant man who has not come in contact with a physician, the man who lives far in the country, on a farm. It is unfair that if he has not had his diagnosis within this time he may not be compensated. I think I make myself clear to you gentlemen. Here, we will say this: two years and eleven months after discharge a man has a diagnosis made of early tuberculosis. Without question he is compensable now. In other words, a man far advanced who has not seen a physician, who has his diagnosis made three years and one day after discharge, is not compensable. That, to me, gentlemen, seems very unfair. I want to bring this up because it should be very close to all of us. Every intent of the law was that every man who developed tuberculosis within three years after discharge was compensable. But if he was so unfortunate as not to have seen a physician within the time, no matter what evidence he has, he is not compensable. Now, I feel that the actual, absolute unfairness of this thing ought to impress us, I feel that a body of medical reserve officers ought to be sufficiently interested in this subject to try to bring some pressure to bear that this evident unfairness may be corrected, though I don't know then that it will be corrected. We have been working on it.

Now, I want to speak of another thing. That many of these men did not develop tuberculosis as a result of service is true, that I freely grant, gentlemen. The other day before a committee I was asked that very question. I freely granted that these men, that is only a small part of them, developed tuberculosis as a result of war service. But that is not the argument, the point is this: First of all, these boys were taken out of life when they were just getting started; they were put into a machine which necessarily destroyed their initiative. They were put into our camps and made into soldiers. They were taught that it was just as wrong to do more than they were told to do as it was to do less. They were told just what to do; were told when to sit down and were told when to walk, when to move. Every bit of initiative that could possibly be taken out of a young man was taken away from him in his training as a soldier. Then, they came back and were discharged. They were turned back into civil life at a time when economic conditions were

extremely difficult. They were taken out and put back into life when they hadn't an opportunity to look out for themselves, for their future, and had been unable to save anything. The result was that these fellows who developed tuberculosis had not the opportunity to save enough to take care of themselves. We destroyed their ability to take care of themselves in the army by taking their initiative away from them. I think that is a thing we all must remember, and that is a point that I wanted to bring up. As I said to you before, I have had an opportunity to see all these sides of the case pretty well.

The American Legion has been responsible for practically everything that has been done for the soldier in regard to legislation. It is rather difficult to know what would have been done for the soldiers if it had not been for the American Legion. There have been a great many individuals who have butted in under cover of the American Legion. I am not here to defend all the acts of the American Legion, because I have fought some of them bitterly, but don't forget that the boys are getting what they are now getting today through its influence. The hospital program would have lagged way behind if it had not been for that organization.

The doctors tell me that the American Legion is one of the most valuable agents that the War Bureau has had. I think you will say that they have been co-operating. I have been critical at times, but the Veterans' Bureau looks upon it as a very helpful agent, indeed.

But this problem of the ex-service tuberculous man is a very big one. But don't let's confuse the man who is out just to get his compensation, don't let's forget that where there is one of those there are a large number of men who are making honest efforts to co-operate with the Government in getting back to health. The thing is, one gold digger attracts more attention than one hundred who are really trying to do their best.

One of the most serious problems to my mind is vocational training. It requires the thought of just such men as you who are here today.

Lt. Col. Townsend:

I didn't mean to take into the discussion after the diagnosis was made. The plea that I wanted to make is this: that the man who is making the claim only recently, after two years, but who is trying to connect his claim by affidavit of the physician after diagnosis has been made. He comes to you to get you to say that he had tuberculosis within the two-year period though it is past that now, and you say, "I saw Bill Jones, or whoever he may be, prior to that time, and I think he had tuberculosis." That is the thought I am trying to convey.

Lt. Col. John W. MacConnell, Davidson:

I enjoyed Dr. McBrayer's paper very much. I was with him at Camp Wadsworth, and I know he thinks what he thinks, but I am sure if he had considered longer he would come to somewhat of the opinion that Dr. Dunn has, that the American Legion is an agency for good and one which will help him very much in his work, and I am sure that if he reads his paper again he will readjust it. I am one of those men who

always shoulders trouble. I shouldered a musket in the Spanish War, I was in the war down on the Mexican border. I treated typhoid fever at Camp Grant, and fed those boys there canned soups that I knew to be eight months old, and couldn't say anything. At the same time, remember that I was in the Service, and also remember that in Service your hands are in a great measure tied and you are afraid to say anything. Of course, I don't mean physical fear, but you can't always say what you want to in the Army. As a matter of fact I am now theoretically commander of the 306th medical regiment, but that is only on paper. Now, I am not talking about the individual who always has a grouch. I know at that time it was a good thing for the man who was in the hospital, and we must remember that there are one hundred and ten million people who are standing back of that sick man. It was a good thing for that sick man in 1916 to have a friend down in Camp Grant, a friend who would send him some soup, or a chicken, or something which was palatable to him. Now, I saw the wonderful spirit of the men up at the front. If we could only have maintained that wonderful idealism in 1918 —we were sitting on the top of the world in 1918. And then, when we got out of the service and came to that reaction against military service, we didn't pay much attention to it. The American Legion has a great many times made mistakes, and there are also a great many times it has been of great help. My wife is in charge of the auxiliary at the local base at Davidson College. The American Legion and the Woman's Auxiliary are doing good work and they are always willing to receive suggestions.

We are right now in the backwash of that wonderful spirit which existed in 1918.

It makes me feel mighty proud when I think that our sick men have a friend at court like Dr. Dunn, because I know he is familiar with both sides of the question, and it does me a great deal of good to hear him say that he can see the things in that broad light. Let us be an informational section and let us stand for the best interest of the service man, tuberculous or otherwise. I have no patience with the gold-digger. I have come in contact with lots of those who have all sorts of complaints who want to go down to Dr. Townsend, but I don't stand for that.

MAJ. D. C. ABSHER, M. C. U. S. Army:

Colonel MacConnell made a statement that I would like to take issue with, and that is that this Section will not grow and cannot grow. I would like to say that this is the Medical Veterans and Reserve Officers' Section. I believe as time goes on we shall have more medical officers in the Reserve Corps, and for that reason I hope that it will continue to grow.

MAJ. R. MCBRAYER, closing the discussion:

I think I would be justified in calling my paper a success because of the discussion it provoked. It is certainly great to hear the laws concerning the exact status of the ex-service man. I expected to hear some discussion of the American Legion. I said it was a most valuable institution, but it needed assistance. Dr. Dunn and Dr. MacConnell said the same thing in other words. I don't disagree with them at all.

The main thing in my paper was education. We have gotten it this morning from those who have spoken, and without it we wont get anywhere. The American Legion shows signs of receiving quite an amount of education since it began. The American Legion is a good thing, I am a member of it, and I am for it. But the Medical Reserve Officers can do a lot to help it not to make mistakes, to help the patient not to make mistakes, and to help his family not to make mistakes, and to help the doctors in the different towns not to make mistakes in diagnosis.

EFFORT SYNDROME*

James E. Kerr, Capt. Med-ORC, Winston-Salem

The title of this paper is misleading. I have camouflaged a perfectly good medical name. It took the world war to make the term "Effort Syndrome" a household word in the medical profession. I suppose it really took soldiering of that character to make effort syndrome the commonplace symptom that it was found to be by the medical men of the army. A careful investigation, more recently, has disclosed the fact that a large per cent are hyperthyroidism, tuberculosis, bronchial asthma, cirrhosis of the liver, etc. Yet the idea is still very deeply impressed upon us that it was the exacting requirements that produced the soldier's heart synonymous with effort syndrome. This preface leads us up to the real significance of my paper. I think it is the absence of effort syndrome on the part of the average medical officer of the Reserve Corps that is worrying our commanding officers in the army at this time. For this reason I consented to write a short paper on some subject related to the O. R. C. A reserve officer that does not produce something for the good of the service each year is really no asset to the army—he is a liability. I am not sure but that such an officer should be discharged from the service because he is lazy and inefficient. An active man will not content himself with passive measures but will interest himself in any organization to which he connects his name. He will not suffer his name to be used in the army records as a filler but will insist that it have a certain specific value to the organization to which he belongs. I am a member of different clubs in my home town and I know in a general way what my fellow members think of me by the way they entrust certain duties to me. The standing Army of the United States is the big dynamo of the present army organization, yet the National Guard and the Reserve made it possible for us to be units of almost as much importance as the standing army. Today public opinion will not support a large standing army. This being the case, the National Guard and the Reserve offer an opportunity for service that is worthy the consideration of high thinking American men who are eligible. If we are selfish and let the experience gained in the late war be lost to this generation, the next conflict, if it comes, will certainly find America in the same state of unpreparedness that faced us April 6, 1917. I feel that the officers of the present standing army are doing their best to arouse enthusiasm in the other branches of the Service, and yet it is manifest that there is too much indifference on the part of the National Guard and Reserve. A

*Read by title.

nation is in a state of decay whenever her citizens will not contribute freely of their time and money in the support of her institutions. It is the policeman that keeps the marauder from despoiling our homes. It is the soldier that polices our nation and upholds the law. At present we find our ideas of a strong and well organized army much opposed, but if you believe in the army and its usefulness to the nation, both in peace and war, by being an interested member of one or the other organizations, you will convince the indifferent one by one.

How to assist in building up a strong Reserve Army:

(1) Speak to the young men of your community about the advantages of the Citizens' Military Training Camp.

(2) If any boys in your community have had C. M. T. C. training and have found it good for them, have them write an article for the home paper on the subject.

(3) Get your local newspapers to print articles from time to time bearing on the usefulness of the C. M. T. C. to the nation.

(4) Be sold yourself on the Citizen Army idea. Sell the idea to your own community and you will merit the honor conferred on you by your own government in making you an officer in the United States Army.

(5) Keep informed on the work of the Reserve Organization.

(6) Answer all correspondence promptly.

I have encouraged and assisted five or six men to join the Reserve this year. I have made an examination of one man for a Commission. What have you done?

Lt. Col. Joseph H. Way, Chairman:

This closes the work of this Section. I thank you for your presence, and I believe I am safe in saying that the initial section meeting, though hurriedly gotten up, the program having been arranged within the past fortnight or so, has been a decided success. I bespeak for the Section your continued interest and cordially invite the co-operation of every medical officer from this State who saw service in the World War, or present members of Med-ORC, and medical officers of the N. C. National Guard.

Washington, D. C., 12th April, 1923.

Dear Sir:

In response to your letter of the 28th ultimo, I regret very much that it is not possible to furnish you with a list of the medical officers, residing in the State of North Carolina, who served in the Navy during the World War.

This would necessitate the perusal of some three thousand records and, owing to our limited clerical force and the great amount of work devolving upon this force at the present time, a list such as you desire could not be prepared in a short period of time.

I am, however, pleased to furnish you with the following list of officers who are at present in the Medical Corps of the Naval Reserve Force and who reside in the State of North Carolina:

Lieutenant Julian C. Brantley, Spring Hope, N. C.

Lieutenant Harry L. Brockmann, Greensboro, N. C.
Lieutenant Fairley P. James, Laurinburg, N. C.

Very truly yours,
E. R. STITT,
Surgeon General, U. S. Navy.

Lt. Col. Joseph H. Way, Med-ORC.
State Board of Health.
Waynesville, N. C.

LIST COMMISSIONED MEDICAL OFFICERS MED-ORC U. S. ARMY, RESIDENT IN NORTH CAROLINA, AS REPORTED TO THE CHAIRMAN OF SECTION "MEDICAL VETERANS AND MEDICAL OFFICERS' RESERVE CORPS," MAY 7, 1923, BY MAJ. D. C. ABSHER M. C. U. S. ARMY, HEADQUARTERS 306 MEDICAL REGIMENT, 81ST DIVISION, U. S. ARMY:

Colonel William L. Dunn, Med-ORC, 223 Hillside St., Asheville.
Lieutenant Colonel Charles S. Lawrence, Med-ORC, Winston-Salem.
Lieutenant Colonel John W. MacConnell, Med-ORC, N. Main St., Davidson.
Lieutenant Colonel Henry Norris, Med-ORC, Rutherfordton.
Lieutenant Colonel Coite Long Sherrill, Med-ORC, 834 N. Center St., Statesville.
Lieutenant Colonel Maurice Lyndon Townsend, Med-ORC, 204 N. Tryon St., Charlotte.
Lieutenant Colonel Joseph Howell Way, Med-ORC, S. Main St., Waynesville.
Lieutenant Colonel Abram Rencher Winston, Med-ORC, Franklinton.
Major Joshua F. Abel, Med-ORC, Waynesville.
Major George Edward Barksdale, Med-ORC, U. S. Vet. Hosp. No. 60, Oteen.
Major Marvin A. Bowers, Med-ORC, Winston-Salem.
Major James Bell Bullitt, Med-ORC, Chapel Hill.
Major Pinkney Jones Chester, Med-ORC, Box 538, Greenville.
Major Julius Arthur Dosher, Med-ORC, Southport.
Major Robert T. Ferguson, Med-ORC, No. 6 Greenville Rd., Myers Park, Charlotte.
Major Thomas Byron Gold, Med-ORC, Lawndale.
Major Thomas A. Hathcock, Med-ORC, Norwood.
Major Reuben Adolphus McBrayer, Med-ORC, Sanatorium.
Major Leland Carson McIntosh, Med-ORC, Garnet St., Henderson.
Major William Edwin Park, Med-ORC, 239 Haywood St., Asheville.
Major Frederick James Pate, Med-ORC, No. 2 Meadowbrook Terrace, Irving Park, Greensboro.
Major Michael Saliba, Med-ORC, Wilson.
Major Joseph Hubbard Saunders, Med-ORC, Williamston.
Major Charles Lacy Scott, Med-ORC, Sanford.
Major Frank R. Wrenn, Med-ORC, Siler City.
Captain Noah B. Adams, Med-ORC, Murphy.
Captain George Alexander, Med-ORC, Winyah Sanitorium, Asheville.
Captain John E. Ashcraft, Med-ORC, Monroe.
Captain Spencer P. Bass, Med-ORC, Tarboro.
Captain Holman Bernard, Med-ORC, Pinnacle.

Captain Charles Zachariah Candler, Med-ORC, Sylva.
Captain Thomas Craven, Med-ORC, Huntersville.
Captain Joseph Henry Cutchin, Med-ORC, Whitakers.
Captain Ralph L. Daniels, Med-ORC, New Bern.
Captain John Wesley Dyer, Med-ORC, Box 190, High Point.
Captain Philip Samuel Easley, Med-ORC, 420 Mulberry St., Statesville.
Captain Arthur Edward Gouge, Med-ORC, Bakersville.
Captain Ira May Hardy, Med-ORC, 309 West Lenoir St., Kinston.
Captain John Thomas Hoggard, Med-ORC, 903 Murchison Bldg., Wilmington.
Captain Andrew B. Holmes, Med-ORC, Box 126, Council.
Captain Wiley Warren Johnston, Med-ORC, Box 208, Manteo.
Captain James Edwin Kerr, Med-ORC, Winston-Salem.
Captain John Daniel Kerr, Med-ORC, Clinton.
Captain Archie McCallister, Med-ORC, U. S. Vet. Hosp. No. 60, Oteen.
Captain Jay Harlee McClellan, Med-ORC, Statesville.
Captain Clarence S. Maxwell, Med-ORC, Beaufort.
Captain Henry B. Maxwell, Med-ORC, Pinkney St., Whiteville.
Captain George Riddle Patrick, Med-ORC, Lowell.
Captain Elber Brodhead Peace, Med-ORC, U. S. Vet. Hosp. No. 60, Oteen.
Captain John Calvin Rich, Med-ORC, Candler.
Captain John Daniel Robinson, Med-ORC, Wallace.
Captain Joseph Rothman, Med-ORC, U. S. Vet. Hosp. No. 60, Oteen.
Captain Victor Roy Small, Med-ORC, Hix Hill State Hospital, Raleigh.
Captain William Calhoun Stirling, Jr., Med-ORC, Winston-Salem.
Captain Lewis Holmes Swindell, Med-ORC, Washington.
Captain Carl Vann Tyner, Med-ORC, Smithfield.
Captain Bartlett Jones Witherspoon, Med-ORC, 915 S. Tryon St., Charlotte.
Captain William Walter Young, Med-ORC, Highland Hospital, Asheville.
1st Lieutenant Joseph F. Blake, Med-ORC, Chadbourn.
1st Lieutenant William Burdette Chapin, Med-ORC, Pittsboro.
1st Lieutenant George Hamilton Davis, Med-ORC, Wake Forest.
1st Lieutenant Lemuel T. Delaney, Med-ORC, (Colored) 212 N. State St., Raleigh.
1st Lieutenant Price Barringer Hall, Med-ORC, Pembroke.
1st Lieutenant Frederick Cecil Hubbard, Med-ORC, Statesville.
1st Lieutenant Parran Jarboe, Med-ORC, Irving Park, Greensboro.
1st Lieutenant Glenn Long, Med-ORC, Newton.
1st Lieutenant Irving Everett Shafer, Med-ORC, 230 West Thomas St., Salisbury.
1st Lieutenant William Nelson Thomas, Med-ORC, Oxford.
1st Lieutenant Hugh Brantly York, Med-ORC, 204 Simmons Ave., Williamston.

NOTES BY MAJOR ABSHER:

1. The list is complete so far as the 81st Division goes; however it should be noted there are Reserve Officers in the State of North Carolina whose names are not on file at Headquarters 81st Division.

2. There is not an available list here of all those holding commissions during the World War.—D. C. A.

ORGANIZATION OF A CANDIDATE SCHOOL FOR FELLOWS OF THE AMERICAN COLLEGE OF SURGEONS

On the evening of April 16, 1923, at a dinner meeting at Kenilworth Inn, Dr. John Wesley Long, President of the Medical Society of the State of North Carolina, invited all the Fellows of the American College of Surgeons resident in the State of North Carolina, and any surgeon at the meeting who was in good standing in the Medical Society of the State of North Carolina and desired to become a Fellow of the American College of Surgeons to meet with him. Dr. Long announced the idea of the organization above mentioned to the Fellows present and the idea was unanimously adopted. The temporary organization consists of Dr. J. M. Parrott, Chairman, and Dr. Hamilton W. McKay, Secretary, for the ensuing year Dr. C. A. Julian, President and Dr. Hamilton W. McKay, Secretary. About thirty-five members joined the school.

Dr. Long announced that the purpose of this Society is briefly to train physicians, the young men especially, for fellowship in the College.

President Long mentioned the matter in his President's Address the next day and the House of Delegates of the Medical Society of the State of North Carolina, as well as the General Sessions, approved of the organization.

WOMAN'S AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Pursuant to a recommendation in the address of the President, Dr. John Wesley Long, which was favorably reported upon by the Committee on the President's Address and approved by the House of Delegates of the Medical Society of the State of North Carolina, on April 17, 1923, the Woman's Auxiliary to the Medical Society of the State of North Carolina was organized at a meeting on the morning of April 18, 1923, in Kenilworth Inn, Biltmore, with Mrs. Paul Presley McCain, of Sanatorium, acting as Organization Chairman.

The meeting was opened with the Lord's Prayer, after which the members were classified according to districts. Mrs. S. C. Red, of Houston, Texas, President of the Woman's Auxiliary to the American Medical Association, gave a brief history and an account of the work of the Auxiliary.

Mrs. Eugene B. Glenn, of Asheville, welcomed the visitors to the city, and stressed the ways in which the Woman's Auxiliary could be of real help and inspiration to the State Society.

Upon the request of the Chairman, Mrs. I. W. Faison, of Charlotte, explained the social possibilities of the organization.

A constitution and by-laws were adopted, and the following officers elected:

President----------Mrs. Paul Presley McCain, Sanatorium
President-Elect----------Mrs. I. W. Faison, Charlotte
Vice-Presidents:

Mrs. J. W. Long----------Greensboro
Mrs. J. Howell Way----------Waynesville
Mrs. J. Vance McGougan----------Fayetteville
Mrs. Hettie W. McGeachy----------Kinston

Recording Secretary----------Mrs. J. A. Keiger, Greensboro
Corresponding Secretary----------Mrs. A. McN. Blair, Southern Pines
Treasurer----------Mrs. W. L. Jackson, High Point

COUNCILORS

First District----------Mrs. R. L. Kendricks, Elizabeth City
Second District----------
Third District----------Mrs. J. Gerald Murphy, Wilmington
Fourth District----------Mrs. K. C. Moore, Wilson
Fifth District----------Mrs. T. C. Johnson, Lumberton
Sixth District----------Mrs. B. J. Lawrence, Raleigh
Seventh District----------Mrs. C. M. Strong, Charlotte
Eighth District----------Mrs. H. Frank Starr, Greensboro
Ninth District----------Mrs. A. A. Kent, Lenoir
Tenth District----------Mrs. B. L. Ashworth, Marion

A vote of thanks was extended to Mrs. Red for her help in organizing the Auxiliary.

Greetings from the Medical Society of the State of North Carolina were tendered by Dr. J. W. Long, President of the Society, who, with Dr. L. B. McBrayer, Secretary-Treasurer, attended the organization meeting.

After registration of those present, the meeting adjourned.

CONSTITUTION

ARTICLE I—NAME

The name of this association shall be the Woman's Auxiliary to the Medical Society of the State of North Carolina.

ARTICLE II—OBJECT

The object of this Auxiliary shall be to promote unity, harmony and concord between the members of the medical profession and between the families of such members; to assist in the social activities at state, district and county society meetings; to interpret to the public the traditions, aims and objects of the medical profession; to fraternize with women's organizations of whatsoever kind, and to promote in every possible way the interests in general of the medical profession—locally, and in the State and Nation.

ARTICLE III—MEMBERSHIP

The membership of the Woman's Auxiliary to the Medical Society of the State of North Carolina shall be composed of the District Woman's Auxiliaries to the County Medical Societies.

ARTICLE IV—OFFICERS

The officers of this Auxiliary shall be a President, a President-elect, four Vice-Presidents, a Recording Secretary, a Corresponding Secretary, and a Treasurer.

ARTICLE V—EXECUTIVE BOARD

These officers, together with one representative from each of the ten Councilor Districts of the Medical Society of the State of North Carolina, shall constitute an Executive Board to conduct the business of this Auxiliary.

ARTICLE VI—ELECTIONS

(a) These officers and the ten district representatives, constituting the Executive Board, shall be elected annually by ballot at the annual meeting.

(b) A nominating committee shall be elected by the Executive Board to present a list of officers and representatives at the annual meeting; this committee to be composed of seven members, no two members to come from the same district, and not more than three of whom may be members of the Executive Board.

ARTICLE VII—MEETINGS

The meetings of the Woman's Auxiliary shall be held at the same time and place as the session of the Medical Society of the State of North Carolina.

ARTICLE VIII—DELEGATES

Each County Auxiliary shall be entitled to send one delegate and her alternate to each meeting, these accredited delegates with the members of the Executive Board to form the voting body. Each delegate shall present the receipt for dues to her County Auxiliary as her credentials.

ARTICLE IX—DUES

Each County Auxiliary shall pay dues to the State Auxiliary at the rate of ten cents per capita, at least two months prior to the annual meeting.

ARTICLE X—AMENDMENTS

This Constitution may be amended at any regular meeting of the Auxiliary, provided that written notice has been sent to each County Auxiliary not less than two months prior to said meeting.

BY-LAWS

1. *Duties of Officers*—The duties of the President, the Vice-Presidents, the Recording and Corresponding Secretaries and the Treasurer shall be those which usually devolve upon such officers.

2. *Committees*—The President and Executive Board shall have power to create such committees as become necessary to promote the welfare of the Auxiliary.

3. *Meetings*—All meetings of the Auxiliary and the Executive Board shall be conducted according to the regular order of business and parliamentary law which usually govern the conduct of such meetings.

4. *Quorum*—Seven members of the Executive Board shall constitute a quorum.

5. *Amendments*—These by-laws may be amended at any meeting of the Executive Board or at the annual meeting of the Auxiliary by a two-thirds vote of the members present, provided that such amendments do not conflict with the spirit of the Constitution.

LIST OF CHARTER MEMBERS

Ashby, Mrs. E. C._____Mount Airy
Ashworth, Mrs. B. L._____Marion

Blair, Mrs. A. McNiel__Southern Pines
Bulla, Mrs. A. C._____Raleigh
Bullock, Mrs. Jack H._____Oxford

Carter, Mrs. Paul C._____Weldon
Choate, Mrs. B. O._____Sparta
Choate, Mrs. G. W._____Salisbury
Compton, Mrs. B. S._____Oteen
Craven, Mrs. T. C._____Ramseur

Dixon, Mrs. H. Carlyle_____Madison

Faison, Mrs. I. W._____Charlotte

Gold, Mrs. Charles F._____Ellenboro

Harden, Mrs. Graham_____Burlington
Hocutt, Mrs. Battle A._____Clayton
Holt, Mrs. W. P._____Duke

Jackson, Mrs. W. L._____High Point
Johnson, Mrs. T. C._____Lumberton

Keiger, Mrs. James A._____Greensboro
Kendricks, Mrs. R. C.___Elizabeth City
Kent, Mrs. A. A._____Lenoir

Lawrence, Mrs. B. J._____Raleigh
Linney, Mrs. R. Z._____Charlotte
Linville, Mrs. A. Y.____Winston-Salem
Long, Mrs. E. F._____Raleigh
Long, Mrs. John W._____Greensboro

McBrayer, Mrs. R._____Sanatorium
McCain, Mrs. P. P._____Sanatorium
MacConnell, Mrs. John W.___Davidson
McGeachy, Mrs. Hettie W.____Kinston
McGougan, Mrs. J. V._____Fayetteville
McNairy, Mrs. C. Banks_____Kinston
McPhaul, Mrs. W. A._____Charlotte
McRae, Mrs. John_____Asheville

Milliken, Mrs. J. S._____Southern Pines
Mitchell, Mrs. R. C._____Raleigh
Moore, Mrs. Charles E._____Greensboro
Moore, Mrs. K. C._____Wilson
Murphy, Mrs. J. Gerald____Wilmington
Myers, Mrs. John Q._____Charlotte

Nisbet, Mrs. D. Heath_____Charlotte

Ray, Mrs. John B._____Leaksville
Red, Mrs. S. C._____Houston, Texas
Redwine, Miss Edith_____Asheville
Russell, Mrs. Charles R.__Granite Falls

Sevier, Mrs. D. E._____Asheville
Sevier, Mrs. J. T._____Asheville
Sloan, Mrs. H. L._____Charlotte
Starr, Mrs. H. F._____Greensboro
Strong, Mrs. C. M._____Charlotte

Watkins, Mrs. Geo. T., Jr.,____Durham
Way, Mrs. J. Howell_____Waynesville
Worthington, Mrs. Frank D.__Charlotte

ALPHABETICAL LIST OF MEMBERS

WITH POSTOFFICE ADDRESS

*Present at 1923 Meeting at Asheville.

Name	*Address*
*Abel, J. F.	Waynesville
*Abernathy, Claude O.	Raleigh
Abernathy, H. N.	Denver
Abernathy, Miles B.	Reidsville
Abernethy, E. A.	Durham
Achorn, John W.	Pine Bluff
Adams, C. A.	Durham
Adams, Charles E.	Gastonia
*Adams, J. L.	Asheville
Adams, L. C.	LaGrange
*Adams, M. R. (Hon.)	Statesville
Adams, N. B.	Murphy
Adams, R. K.	Raleigh
Adkins, M. T.	Durham
Alexander, Annie L. (Hon.)	Charlotte
*Alexander, Geo.	Asheville
*Alexander, James R.	Charlotte
Alexander, M. J.	Montgomery, India
*Allan, William	Charlotte
Allen, Benjamine G.	Henderson
*Allen, Chas. I.	Wadesboro
Allen, Jos. A.	New London
Allen, Rufus L.	Waynesville
Allgood, R. A.	Fayetteville
Allhands, John M.	Cliffside
Ambler, Arthur C.	Asheville
*Ambler, Chas. P. (Hon.)	Asheville
*Anders, McT. G.	Boone
Anderson, Abel	Denton
*Anderson, Albert (Hon.)	Raleigh
Anderson, Chas. A.	Burlington
Anderson, James A.	Gastonia
*Anderson, James G.	Asheville
*Anderson, Jasper N.	Albemarle
*Anderson, Thos. Eli (Hon.)	Statesville
Anderson, Wade H.	Wilson
Anderson, Wm. S.	Wilson
*Andrews, John H.	White Rock
Andrews, Nathan H.	Rowland
Andrews, Robert M.	Bostic
Anthony, J. E.	Kings Mountain
*Archer, Isaac J.	Black Mountain
Armfield, Romulus	Marshville
*Armstrong, C. W.	Salisbury
Asbury, F. E. (Hon.)	Asheboro
*Ashby, E. C.	Mount Airy
Ashby, J. M.	Raleigh
Ashcraft, J. E.	Monroe
Ashe, E. S.	Wadesboro
Ashe, J. R.	Charlotte
*Ashworth, B. L.	Marion
*Ashworth, W. C.	Greensboro
Attmore, Geo. S. (Hon.)	Stonewall
Austin, D. R.	Charlotte
Austin, F. DeCosta	Charlotte
Austin, J. A.	Charlotte
Austin, J. W.	High Point
*Averitt, K. G.	Cedar Creek
Aydlette, H. T.	Greensboro
Aydlette, Jos. P.	Earl
Baggett, Leaman	Tabor
Baily, K. H.	Oteen
Baird, C. A.	Mount Airy
Baird, John W.	Mars Hill
Baker, Horace M.	Lumberton
*Baker, J. M. (Hon.)	Tarboro
*Baker, W. E.	Arden
Ball, M. W.	Newport
Bandy, W. G.	Maiden
Bangle, J. A.	Concord
Banner, Chas. W.	Greensboro
Barbee, G. S.	Zebulon
Barber, Y. M.	Macclesfield
Barefoot, M. L.	Dunn, Rt. 6
Barnes, B. F.	Elm City
Barrett, H. P.	Charlotte
*Barron, A. A.	Charlotte
Basnight, Thos. G.	Stokes
*Bass, H. H.	Henderson
Bass, Spencer P.	Tarboro
Battle, Geo. C.	Asheville

Name	*Address*
Battle, Ivan P.	Rocky Mount
*Battle, John T. J. (Hon.)	Greensboro
*Battle, S. W. (Hon.)	Charlotte
Baynes, R. H.	Durham
Baynes, R. S.	Hurdle Mills
*Beall, L. G.	Asheville
Beall, Wm. P. (Hon.)	Greensboro
Beam, H. M.	Wood
Beam, R. S.	Lumberton
Beasley, E. B.	Fountain
Beath, Thomas	Raleigh
Beckwith, R. P.	Rosemary
Beers, Charles	Asheville
Bell, A. E.	Mooresville
Bell, Carl W.	Raleigh
Bell, G. E.	Wilson
Bell, J. C.	Maysville
Bellamy, Robt. H.	Wilmington
Belton, J. F.	Winston-Salem
Benbow, J. T.	Winston-Salem
Bennett, Jos. H.	Wadesboro
Bennett, W. H.	Savannah, Ga.
Bernard, Holman	Pinnacle
Berry, John	Greensboro
Best, Benj. W.	Greensboro
Best, Henry B.	Wilson
*Biggs, Montgomery H.	Rutherfordton
*Billings, G. M.	Morganton
Bingham, G. D.	Sugar Grove
*Bisch, Louis E.	Asheville
Bitting, Numa Duncan	Durham
*Black, O. R.	Landis
*Blackburn, T. C.	Hickory
*Blair, A. McNiel	Southern Pines
Blair, J. L.	Gastonia
Blair, M. P.	Marshville
Blake, J. F.	Chadbourn
Blalock, B. K.	Charlotte
Blalock, Nathan M.	McCullers
Blanchard, T. W.	Hobbsville
Blue, A. McN.	Carthage
Boaz, Thos. A.	Stoneville
Boddie, Needham P. (Hon.)	Durham
Boger, D. T.	Rockwell
*Boice, E. S.	Rocky Mount
Bonner, A. C.	Greensboro
Bonner, H. M.	Raleigh
Bonner, J. B.	Aurora
*Bonner, K. P. B.	Raleigh
*Bonner, O. B.	High Point
Booker, L. S.	Durham
Boone, S. B.	Jackson
Boone, W. H.	Durham
Bost, T. C.	Charlotte
*Bostic, Wm. C.	Forest City
Bowdoin, Geo. W.	Wilmington
*Bowers, M. A.	Winston-Salem
Bowling, Edwin H.	Durham
Bowman, E. L.	McDonolds
Bowman, H. E.	Aberdeen
Bowman, H. P.	Greensboro
*Bown, Herbert H.	Asheville
Boyce, J. M.	Wadesboro
Boyden, W. C.	China Grove
Boyette, E. C.	Charlotte
Boyles, A. C.	Troy
Boyles, J. H.	Greensboro
Boyles, M. F.	Dallas
Braddy, Wade H.	Greensboro
Bradford, B. M.	Lincolnton
Bradshaw, Isaac W.	Relief
Bradsher, Wm. A.	Roxboro
Brandon, Wm. R.	Statesville
Brantley, Hassell	Spring Hope
Brawley, M. H.	Salisbury
*Brawley, Robt. V.	Salisbury
Bray, T. L.	Plymouth
Brenizer, A. G., Jr.	Charlotte
Brewer, J. S.	Roseboro
*Briggs, Henry H.	Asheville
Brinkley, H. M.	West Durham
Bristow, C. O.	Morganton
*Brockman, Harry L.	Greensboro
*Brooks, B. U.	Durham
Brooks, G. M.	Elm City
Brooks, H. E.	Clayton
Brooks, Hugh M.	White Tops, Va.
*Brooks, R. E.	Burlington
*Brookshire, H. G.	Asheville
*Broughton, N. B.	Raleigh
Broun, Matthew S.	Asheville
Brown, Clarence E.	Faith
Brown, E. M.	Washington
Brown, G. A.	Mt. Ulla
Brown, G. W.	Raeford
Brown, J. P.	Fairmont
*Brown, J. S.	Hendersonville
*Brownson, Wm. C.	Asheville

Name	*Address*
Brunson, E. P.	Boardman
Bryant, Chas. G.	Elkin
Bryson, E. J.	Cullowhee
Buchanan, C. L.	Union Mills
Buchanan, C. L.	Union Mills
Buchanan, L. T.	Raleigh
*Buchanan, S. E.	Concord
Buckner, J. M.	Swannanoa
Buckner, Rufus G.	Asheville
Buffalo, J. S.	Garner
Buie, Roderick M.	Duke
*Bulla, A. C.	Raleigh
Bulla, M. S.	Elizabeth City
Bullard, G. F.	Elizabethtown
*Bullitt, J. B.	Chapel Hill
*Bullock, J. H.	Oxford
Bullock, Thos. C.	Autryville
Bullock, W. B.	Oxford
*Bullock, Ernest S.	Wilmington
Bunn, J. J.	Mt. Pleasant
Burbarge, Thos. I.	Como
*Burleson, W. B.	Plumtree
Burleyson, L. N.	Concord
Burnett, Isaac E.	Mars Hill
*Burrus, John T.	High Point
Burt, Benj. W.	Holly Springs
Burt, S. P.	Louisburg
Busby, Julian G.	Spencer
*Butler, Leroy J.	Winston-Salem
Butt, R. B.	Marion
Butt, Virgil R.	Bakersville
Byerly, Andrew B.	Cooleemee
Bynum, John (Hon.)	Winston-Salem
Caddell, S. W.	Elon College
Caldwell, Daniel G. (Hon.)	Concord
Caldwell, J. H.	Charlotte
Calloway, Arthur W.	Asheville
Campbell, Alton C.	Raleigh
Campbell, J. R.	Newton
Campbell, J. W.	Gastonia
Candler, Chas. Z.	Sylva
Cannady, N. B.	Laurinburg
Cannady, Sam H.	Oxford
Capehart, Alanson	Roxobel
*Carlton, Romulus L.	Winston-Salem
Carmichael, T. W.	Rowland
Carr, Ransom Lee	Rose Hill
Carroll, E. D. Dixon	Raleigh
*Carroll, Jno. L.	Asheville
*Carroll, John W.	Wallace
*Carter, H. W.	Washington
*Carter, P. C.	Weldon
*Cason, H. M. S.	Edenton
Cathell, J. E.	Moncure
Caton, Geo. A.	New Bern
Cauble, H. H.	Kannapolis
Caveness, Zebulon M.	Raleigh
Cease, Harry	Johnston City, Tenn.
*Chambers, P. P.	Asheville
Chapin, Wm. Burdette	Pittsboro
*Cheadle, C. M.	Asheville
*Cheatham, Goode	Henderson
Cheek, C. E.	Fuquay Springs
*Cheeseborough, Thos. P.	Asheville
*Chester, P. J.	Greenville
*Choate, B. O.	Sparta
*Choate, Glenn Wm.	Salisbury
Clark, W. H.	Dorsey
Clement, Edward B.	Salisbury
Cliff, B. F.	Hendersonville
Clinton, Roland S.	Gastonia
Clodfelter, C. M.	Lexington
Cobb, Wm. H., Jr.	Goldsboro
Cochrane, J. D.	Newton
*Cocke, C. H.	Asheville
*Cocke, E. R.	Asheville
*Cocke, Jere E.	Asheville
Coddington, H. A.	Wilmington
Coe, Samuel S.	High Point
Coffey, Lawrence H.	Lenoir
Colby, C. DeW.	Asheville
*Cole, Walter F.	Greensboro
Coleman, G. S.	Kenly
Coltrane, Wallace E.	Dunn
Combs, J. Howard	Elizabeth City
Cook, H. L.	Fayetteville
*Cooke, G. C.	Winston-Salem
Cooper, G. M.	Raleigh
Coppedge, T. O.	Nashville
*Coppridge, W. M.	Durham
*Corpening, O. J.	Granite Falls
Costner, Thos. F.	Lumberton
*Cotten, Clyde E.	Asheville
Council, J. B. (Hon.)	Salisbury
Couch, V. F.	Yadkinville
Covington, Platt W.	Wadesboro
Cowell, Will H.	Shawboro

Name	*Address*
Cox, Benj. F.	Palmerville
Cox, B. T.	Winterville
Cox, E. L. (Hon.)	Jacksonville
*Cox, G. S.	Tabor
Cox, Thomas A.	Hertford
Cozart, W. S.	Holly Springs
*Craig, S. Douglas	Winston-Salem
Cranmer, J. B.	Wilmington
*Craven, F. C.	Ramseur
Craven, Thomas	Huntersville
Craven, W. W.	Huntersville
*Crawford, Robt. H.	Rutherfordton
Crawford, W. B.	Goldsboro
Crawford, W. J.	Winston-Salem
Croom, G. H.	Wilmington
Crouch, A. McR.	Wilmington
*Crowell, A. J.	Charlotte
Crowell, W. H.	Whiteville
Crowell, G. B.	Lincolnton
*Crowell, L. A.	Lincolnton
Cummings, M. P.	Reidsville
Cutchen, J. Henry	Whitakers
Daligny, Charles (Hon.)	Troy
Dalton, David N. (Hon.)	Win.-Salem
Dalton, W. N.	Winston-Salem
Dameron, Ernest L.	Star
*Daniel, N. C.	Oxford
*Daniels, O. C.	Goldsboro
Daniels, R. L.	New Bern
Darden, O. B.	Richmond, Va.
Daugherty, J. E.	Brooklyn, N. Y.
Davidson, Jno. E. S.	Charlotte
*Davis, F. M.	Canton
Davis, George	Beaufort
Davis, Jas. W.	Statesville
Davis, J. F.	High Falls
Davis, J. J.	Atlantic
Davis, J. M.	Winston-Salem
Davis, Ralph H.	Wilmington
Davis, R. B.	Weeksville
Davis, Thomas W.	Wiston-Salem
Davis, W. C.	Summerfield
Dawson, W. E.	Hookerton
Dawson, Walter W.	Grifton
Deans, A. W.	Battleboro
DeArmon, J. McC. (Hon.)	Charlotte
Dees, D. A.	Bayboro
Dees, R. E.	Greensboro
Dees, Rigdon O.	Greensboro
DeLaney, Chas. O.	Gastonia
*Denchfield, A. L.	Asheville
Denson, H. A.	Bennett
Dewar, Wm. B.	Raleigh
Dick, Julius V.	Gibsonville
Dickie, J. W.	Southern Pines
*Dickinson, E. T.	Wilson
Dillard, G. P.	Draper
Dillard, Richard, Jr. (Hon.)	Edenton
*Dimmett, J. A.	Gastonia
Dixon, G. G.	Ayden
*Dixon, Guy E.	Hendersonville
*Dixon, Hubert C.	Madison
Dixon, Joseph	Ayden
Dixon, Wm. H.	Ayden
Dixon, W. H.	Rocky Mount
*Dodson, H. H. (Hon.)	Greensboro
Donnelly, J.	Charlotte
Drafts, Andrew B.	Hendersonville
Duffy, Leinster	New Bern
Duffy, R. N.	New Bern
*Duncan, Amos E.	Avondale
Duncan, Chas. L.	Beaufort
Duncan, Julian E.	North Wilkesboro
Dunlap, L. V.	Albemarle
*Dunn, Wm. L.	Asheville
Eagles, Chas. S.	Stantonsburg
Easley, P. S.	Statesville
*Eckel, O. F.	Asheville
Eddleman, Hall M.	Gastonia
Edgerton, Jas. L. (Hon.)	Hendersonville
Edwards, A. D.	Winston-Salem
*Edwards, B. O.	Asheville
Edwards, C. J.	Raleigh
Edwards, C. P.	Asheville
Edwards, F. D.	Belwood
Edwards, G. C. (Hon.)	Hookerton
Edwards, J. D.	Siler City
*Elias, Lewis, W.	Asheville
Ellen, C. J.	Greenville
Eller, Albert J.	Readybranch
*Ellington, A. J.	Goldsboro
Ellington, Jas. H.	Sandy Ridge
Elliott, A. H.	Wilmington
Elliott, J. A.	Charlotte
Elliott, W. F.	Lincolnton
Ellis, F. A.	Salisbury

Name	*Address*
Ellis, R. C. (Hon.)	Shelby
English, Edwin S.	Brevard
English, E. L.	Rosman
English, I. L.	Faust
Erwin, Evan A.	Laurinburg
Evans, J. E.	Wilmington
Evans, L. B.	Windsor
Everett, A. C.	Rockingham
*Faison, I. W. (Hon.)	Charlotte
Faison, W. W. (Hon.)	Goldsboro
Faison, Yates W.	Charlotte
Farrior, J. W.	Warsaw
Farthing, L. E.	Wilmington
Fassett, Burton W.	Durham
Faucett, T. S.	Burlington
Fearing, Isaiah	Elizabeth City
Fearing, Zenas	Elizabeth City
Fearrington, Jos. P.	Winston-Salem
Felts, Robt. L.	Durham
Fenner, Edwin F.	Henderson
Ferebee, C. G.	Morehead City
Fergerson, H. B.	Halifax
*Ferguson, R. T.	Charlotte
*Fetner, L. M.	Charlotte
Fetzer, P. W.	Mayodan
Fields, B. T.	Greensboro
Finch, O. E.	Apex
Fitzgerald, J. H.	Smithfield
Fitzgerald, J. Y.	Indian Trail
*Flack, Roswell E.	Asheville
Flagge, Phillip W.	Jamestown
Fleetwood, Joe E.	Conway
Fleming, G. M.	Cleveland
Fleming, M. I.	Rocky Mount
Flemming, W. L.	Enfield
Fletcher, M. H. (Hon.)	Asheville
Flippin, Jas. M.	Winston-Salem
Flippin, R. E. L.	Pilot Mountain
Flippin, Samuel T.	Siloam
Flowe, R. Frank	Kannapolis
*Flowers, Clarence A.	Wendell
Flowers, C. E.	Zebulon
*Flowers, G. E.	Hickory
Floyd, L. D.	Cerro Gorda
Flynt, S. S.	Rural Hall
Foard, F. O.	Connelly Springs
Foard, F. T.	Hickory
Foil, M. A.	Mt. Pleasant
Folsom, T. W.	Asheville
Formyduval, T.	Bolton
Fortune, Alex. F.	Greensboro
Foster, H. H.	Norlina
Foster, J. F.	Sanford
Fouts, J. H.	Franklin
Fowler, M. L.	Zebulon
Fox, M. F. (Hon.)	Guilford College
*Fox, Thos. I.	Franklinville
Frazer, H. T.	Asheville
Freeman, Jere	Wilmington
Freeman, R. A. (Hon.)	Burlington
Freeman, R. H.	Raleigh
Fresh, Wm. M.	Weaverville
Frizzelle, M. T.	Ayden
Frye, Glenn R.	Hickory
Futrell, L. M.	Murfreesboro
*Futrell, W. E.	Morganton
Gage, L. G.	Charlotte
Gainey, John W.	Fayetteville
Gallant, Robt. M.	Charlotte
Galloway, W. C. (Hon.)	Wilmington
Gambill, I. S.	North Wilkesboro
Gamble, J. F.	Lincolnton
Gamble, J. R.	Lincolnton
Gardner, G. D.	Asheville
Garren, R. H.	Monroe
Garrenton, Cecil	Bethel
Garrett, F. B.	Rockingham
Garrett, F. J.	Rockingham
*Garrison, D. A.	Gastonia
Garriss, F. H.	Lewiston
Garvey, R. R.	State Road
Gary, R. H.	Murfreesboro
Gaul, Jno. Stuart	Charlotte
Gayle, Edward M.	Richmond, Va.
*Geddie, K. B.	Raeford
Gentry, Geo. W.	Timberlake
*Gibbon, James	Charlotte
*Gibbon, Robert L. (Hon.)	Charlotte
*Gibbs, E. W.	Shelby
Gibbs, N. M.	New Bern
Gibson, L. O.	Statesville
Gibson, John S.	Gibson
Gibson, M. R.	Raleigh
Gilbreath, F. H.	North Wilkesboro
Gill, Robt. J.	Henderson
Gilmer, Chas. S.	Greensboro, Rt. 6

Name	*Address*
Gilmore, W. D.	Cincinnati, O.
Ginn, Theo. L.	Goldsboro
Glascock, J. H.	Greensboro
*Glenn, Eug. B.	Asheville
Glenn, Henry F.	Gastonia
*Glenn, Lucius N.	Gastonia
Gold, Ben.	Shelby
*Gold, Chas. F.	Ellenboro
Gold, G. M.	Shelby, Rt. 5
Gold, T. B.	Lawndale
Goley, Wm. Rankin	Graham
Goley, Wm. Roffin	Shallotte
*Goode, T. V., Jr.	Statesville
Goodman, A. B.	Lenoir
Goodwin, A. W. (Hon.)	Raleigh
Gouge, A. E.	Bakersville
Gouger, Geo. J.	Concord
Gove, Anna M.	Greensboro
Grady, Jas. C.	Kenly
Grady, Leland V.	Wilson, Rt. 2
*Grady, Wm. Earle	Tryon
Graham, Benj. R.	Wilmington
Graham, Geo. A.	Raeford
Graham, Joseph	Durham
Graham, J. A.	Kansas City, Mo.
Graham, Wm. A. (Hon.)	Charlotte
*Grantham, Wm. L.	Asheville
Gray, Eugene P.	Winston-Salem
Grayson, C. S.	High Point
Greene, Arthur W.	Ahoskie
Greene, G. V.	Advance, Rt. 2
*Greene, Jos. B.	Asheville
Greene, J. C.	Greenville
Green, Thos. M.	Wilmington
Green, Wm. W.	Tarboro
*Greenwood, A. B.	Asheville
*Greenwood, S. E.	Fletcher
Grier, Chas. T.	Carthage
Griffin, J. A. (Hon.)	Clayton
*Griffin, M. A.	Asheville
Griffin, T. A.	Morganton
*Griffin, W. R.	Asheville
*Griffith, F. W.	Asheville
*Griffith, L. M.	Asheville
Grigg, W. T.	Lawndale
Griggs, John B.	Elizabeth City
Griggs, W. T.	Poplar Branch
*Grimes, W. L.	Winston-Salem
*Hackney, Ben H.	Lucama
Hagaman, J. B.	Todd
Halsey, Benj. F.	Roper
*Halford, Jos. W.	Lillington
Hall, Julius C.	Albemarle
Hall, P. B.	Pembroke
*Hamilton, John H.	Wilmington
Hammock, J. C.	Walkertown
Hamrick, J. Y., Jr.	Boiling Springs
Hamrick, T. G.	Shelby
Hand, Edgar H.	Pineville
*Hanes, F. M.	Winston-Salem
Hanes, J. L.	Pine Hall
Hardee, Parrott R.	Stem
*Harden, Graham	Burlington
*Hardin, R. H.	Boone
Hardin, E. R.	Lumberton
Hardison, Wm. H.	Creswell
Hardy, Ira M.	Kinston
Hargrove, R. H. (Hon.)	Robersonville
*Hargrove, W. F.	Kinston
Harper, J. H.	Snow Hill
Harper, W. T.	Charlotte
Harrell, Geo. N.	Murfreesboro
Harrell, S. N.	Tarboro
Harrill, L. B.	Caroleen
Harris, Arthur G.	Fairfield
Harris, C. F.	Ansonville
Harris, F. R. (Hon.)	Henderson
Harris, John H.	Franklinton
Harrison, Edmund	Greensboro
*Harrison, H. H.	Asheville
Harriss, Andrew H.	Wilmington
Hart, E. R.	Wilmington
Hart, Jno. E.	Wadesboro
Hartsell, F. E.	Oakboro
Hartsell, J. A.	Concord
Hassell, Jas. L.	Creswell
Hatcher, M. A.	Hamlet
Hathcock, Thos. A.	Norwood
Harvey, W. W.	Greensboro
Hayes, R. B.	Hillsboro
Hays, A. H.	Fairmont
Hays, B. K.	Oxford
*Hayworth, C. A.	Asheboro
Haywood, F. J. (Hon.)	Raleigh
Haywood, Hubert (Hon.)	Raleigh
*Haywood, H. B., Jr.	Raleigh
Head, W. T.	Campbell, S. C., Rt. 4
Heilig, Herman G.	Salisbury

Name	*Address*
Helsabeck, C. J.	Germanton
Helsabeck, R. S.	Mizpah
Hemmingway, J. D.	Bethel
Henderson, C. C.	Mount Olive
Henderson, Jno. P.	Swansboro
Henderson, R. B.	Franklinton
Henderson, S. McD.	Charlotte
Henderson, T. B.	Goldsboro
Henry, T. B.	Rockingham
Herbert, Fred L.	Andrews
*Herbert, Wm. P.	Asheville
Herring, Benj. S.	Wilson
Herring, W. C.	Parsons, Kas.
Hester, Jno. R.	Knightdale
Hiatt, H. B.	High Point
Hickman, M. T.	Hudson
Hicks, Calvin	Durham
Hicks, I. F.	Dunn
Hicks, Romeo	Henrietta
*Hicks, V. M.	Raleigh
Hicks, Wm. N. (Hon.)	Durham
Highsmith, Chas.	Dunn
*Highsmith, J. D.	Fayetteville
Highsmith, J. F. (Hon.)	Fayetteville
Highsmith, Seavy	Fayetteville
*Highway, S. C.	Murphy
*Hill, David J.	Lexington
Hill, J. N.	Murphy
Hill, Wm. I.	Albemarle
Hill, W. Lee	Lexington, Rt. 4
Hines, E. R.	Rocky Mount
Hinnant, Milford	Micro
*Hipp, Edw. R.	Charlotte
*Hipps, A. G. T.	Asheville
Hobgood, J. E.	Thomasville
*Hocutt, Battle A.	Clayton
Hodgin, H. H.	Red Springs
Hodges, Joseph M.	Cranberry
Hoggard, J. T.	Wilmington
Hoggard, Wm. A.	Hertford, Rt. 3
Hollingsworth, E. M.	Mount Airy
*Hollingsworth, E. T.	Clinton
Hollingsworth, R. E.	Mount Airy
Hollar, O. L.	Hickory
*Holloway, O. W.	Durham
Holloway, Robt. L.	W. Durham
*Hollyday, W. M.	Asheville
*Holt, D. W.	Greensboro Revolution Sta.
Holt, E. E.	Southern Pines
Holt, T. J.	Warrenton
Holt, R. B.	Cherokee
Holt, Wm. P.	Duke
Holt, Wm. T.	McLeansville
Honnet, Joseph P.	Wilmington
Hood, J. Sidney	Kings Mountain
Hooks, Thel	Smithfield
Hooper, D. D.	Sylva
Hooper, Jos. W.	Wilmington
Hoover, C. H.	Denver
Hoover, H. R.	Black Creek
Horton, M. C.	Raleigh
Horton, W. C.	Raleigh
Horsley, H. T.	Franklin
Houck, Albert F.	Lenoir
House, W. H.	Goldsboro
Houser, E. A.	Shelby
Houser, O. J.	Charlotte
Hovis, L. W.	Charlotte
Howe, Wm. B. W., Jr.	Hendersonville
Howell, W. L.	Ellerbe
Hoyle, Hughes B.	Manteo
Hubbard, Chas. C.	Farmer
Hughes, F. W. (Hon.)	New Bern
*Hunnicutt, Wm. J.	Asheville
Hunsucker, Chas. L.	Hickory
Hunt, J. F.	Spindale
Hunter, J. P.	Cary
Hunter, J. V.	Asheboro
Hunter, L. W. (Hon.)	Charlotte, Rt. 1
Hunter, M. C.	Huntersville
Hunter, Myers	Charlotte
Hunter, Norman C.	Rockingham
Hunter, W. B.	Gastonia
Hurdle, S. W.	Winston-Salem
*Huston, Jno. W.	Asheville
Hutchins, E. M.	North Wilkesboro
Hutchinson, S. S.	Bladenboro
Hyatt, Fred C.	Greensboro
Ingram, Chas. B.	Mt. Gilead
Irwin, Hammer C.	Pocatella, Idaho
Irwin, Henderson	Goldsboro
*Irwin, J. R. (Hon.)	Charlotte
Isley, W. L.	Burlington, Rt. 1
Ivey, H. B.	Goldsboro
*Ivey, R. R.	Biltmore
*Izlar, H. L.	Winston-Salem

Name	*Address*
Jackson, C. C.	Yeatsville
*Jackson, Walter L.	High Point
Jacocks, W. P.	Columbia, Ceylon
James, Albert W.	Hamlet
James, F. P.	Laurinburg
James, W. D.	Hamlet
Jarboe, Parron	Greensboro
Jarman, F. G.	Roanoke Rapids
Jenkins, Chas. L.	Raleigh
Jenkins, John H.	Gastonia
Jennings, R. G.	Winston-Salem
Jerome, Jas. R.	Wingate
Jett, Samuel G.	Reidsville
Jewett, R. D. (Hon.)	Wilmington
John, Peter	Laurinburg
Johnson, B. C.	Bunn
Johnson, C. T.	Red Springs
*Johnson, Floyd	Whiteville
*Johnson, Geo. W.	Wilmington
Johnson, Henry H.	Louisburg
Johnson, John B.	Old Fort
Johnson, N. M. (Hon.)	Durham
Johnson, R. Lee	Gastonia
Johnson, Robt. W.	Apex
*Johnson, Thos. C.	Lumberton
Johnson, W. A.	Reidsville, R. F. D.
Johnson, W. C.	Canton
Johnson, W. M.	Winston-Salem
*Johnston, J. G.	Charlotte
Johnston, R. H.	Wilson
Johnston, W. W.	Manteo
*Jonas, John F.	Marion
Jones, A. G. (Hon.)	Walnut Cove
Jones, Arthur O.	Greensboro
Jones, Carey C.	Apex
Jones, Clara E.	Goldsboro
Jones, C. M.	Grimesland
Jones, Beverley N.	Winston-Salem
*Jones, J. Walter	Boone
Jones, R. D. V.	New Bern
Jones, Thomas J.	Lansing
Jones, T. Lester	Lansing
*Jones, W. M., Jr.	Greensboro
Jordan, Chas. S.	Asheville
*Jordan, T. M. (Hon.)	Raleigh
Jordan, Wm. S.	Fayetteville
Judd, Eugene C.	Raleigh
Judd, James M.	Varina
*Julian, Chas. A. (Hon.)	Thomasville
*Jurney, Peter C.	Turnersburg
Justice, Jas. T.	Kernersville
*Justice, Z. K.	Davidson
Kafer, Oswald O.	Edward
Kapp, Henry H.	Winston-Salem
*Keiger, Jas. A.	Greensboro
Keiger, O. R.	Winston-Salem
Kendrick, R. L.	Elizabeth City
Kennedy, Geo. W.	Beulaville
*Kennedy, John P.	Charlotte
*Kent, Alfred A.	Lenoir
Kernodle, Chas. E.	Elon College
*Kerns, T. C.	Durham
*Kerr, Jas. E.	Winston-Salem
Kerr, John D.	Clinton
Kibler, W. H.	Morganton
Killian, P. B.	Hayesville
Killian, R. B.	Lincolnton
Killinger, R. R.	Rocky Mount
*King, Edward	Asheville
*King, Parks M.	Charlotte
King, Richard M.	Concord
Kinlaw, W. B.	Rocky Mount
Kinsman, Henry F.	Hamlet
*Kirby, Guy S.	Marion
*Kirk, W. R.	Hendersonville
Kirksey, James	Morganton
Kitchin, Thurman D.	Wake Forest
Klutz, A. F.	Maiden
Klutz, P. J.	Maiden
Kluttz, Dewitt	Washington
Knight, J. B. H. (Hon.)	Williamston
Knight, Wm. P.	Greensboro
*Knoefel, A. E.	Black Mountain
Knowles, D. L.	Rocky Mount
Knox, A. W. (Hon.)	Raleigh
Knox, John, Jr.	Lumberton
Koonce, S. Everett	Wilmington
*Kornegay, Lemuel W.	Rocky Mount
*Lackey, F. H.	Fallston
*Lafferty, Robt. H.	Charlotte
*Lambert, C. F.	Alta Pass
Lambert, W. L.	Asheboro
Lamm, Isaac W.	Lucama
Lancaster, R. M.	Dobson
Landen, J. F.	Chinquapin
Lane, John L.	Rocky Mount
Lane, M. E.	Pinetops

Name	*Address*
Lane, P. P.	Wilson
*Lapham, Mary E.	Highlands
Large, H. Lee	Rocky Mount
Larkin, E. W.	Fayetteville
Lassiter, C. L.	Fremont
Lassiter, H. G.	Weldon
Latham, Jos. R.	New Bern
Laton, Jas. F.	Albemarle
Lattimore, E. B.	Shelby
*Laughinghouse, Chas. O'H.,	Greenville
*Lawrence, B. J.	Raleigh
Lawrence, Chas. S.	Winston-Salem
Lawson, R. B.	Chapel Hill
Leak, Wharton G.	East Bend
Ledbetter, Jas. McQ.	Rockingham
Lee, J. Marshall	Newton Grove
Lee, Lawrence V.	Lattimore
Lee, R. E.	Lincolnton
Lee, S. J. P.	Benson
Leggett, K. (Hon.)	Hobgood
*Leggett, V. W.	Hobgood
*Leinbach, Robt. F.	Charlotte
Lentz, C. M.	Albemarle
Lewis, Geo. W.	Wilson
Lewis, H. W. (Hon.)	Jackson
Lewis, Richard H. (Hon.)	Raleigh
Lewis, S. V.	Wendell
Lilly, Jas. M.	Fayetteville
*Linney, R. Z.	Charlotte
*Linville, A. Y.	Winston-Salem
Linville, W. C.	Goldsboro
Lister, E. W.	Weeksville
Livingston, E. A.	Gibson
Lloyd, B. B.	Chapel Hill
Locke, Eva M.	Greensboro
Lockett, Everett A.	Winston-Salem
Logan, F. W. F.	Rutherfordton
*Long, Benj. L. (Hon.)	Hamilton
Long, Benj. L.	Glen Alpine
Long, D. T.	Hurdle Mills
Long, Edgar M.	Hamilton
*Long, E. F.	Raleigh
Long, Fred Y.	Catawba
Long, Glenn	Newton
Long, H. F. (Hon.)	Statesville
Long, J. W. (Hon.)	Greensboro
*Long, R. H.	Morganton
*Long, Roy C.	Asheville
Long, T. W. M.	Roanoke Rapids
Long, V. McK.	Winston-Salem
Long, Walter T.	Roxboro
Looney, J. J. W.	Rocky Mount
*Lord, Marjery J.	Asheville
*Love, Bedford E.	Roxboro
Love, Wm. M.	Unionville
Love, W. J. (Hon.)	Wilmington
*Lovelace, Thos. C.	Henrietta
Lovill, Robt. J.	Mount Airy
Lowery, Jno. R.	Raleigh
Lubchenko, N. E.	Harrisburg
Lutterloh, I. H.	Sanford
*Lyday, Abram E.	Penrose
Lyday, C. E.	Gastonia
*Lyday, Wm. Monroe	Brevard
Lyle, S. H.	Franklin
Lynch, Geo. B.	Rosman
*Lynch, J. M.	Asheville
Lyon, B. R.	Greensboro
Lyon, E. H.	Bahama
Lyons, Henry Wise	Windsor
*MacConnell, John W.	Davidson
MacFadyen, Paul R.	Concord
*MacNider, Wm. DeB.	Chapel Hill
*MacPherson, G. S.	Asheville
MacRae, J. D.	Asheville
McAdams, C. R.	Belmont
McAnnally, Wm. J.	High Point
*McBrayer, L. B.	Sanatorium
*McBrayer, R.	Sanatorium
McBryde, M. H.	Reidsville
*McCain, P. P.	Sanatorium
McCain, Wm. R.	High Point
*McCall, A. C.	Asheville
*McCampbell, John	Morganton
McClees, Ed. C.	Elm City
McClees, Jas. E.	Pinetown
McClelland, J. O.	Maxton
McCombs, C. J.	Gastonia
McCotter, St. Elmo	Bayboro
McCoy, T. M.	Mount Holly
McCracken, C. M.	Fairview
*McCracken, J. R.	Waynesville
McCuiston, A. M.	Richlands
McDade, B. B.	Corbett, Rt. 1
McDaniels, L. E.	Lasker
McDonald, A. A.	Jackson Springs
McDonald, A. D. (Hon.)	Wilmington
McDowell, F. C.	Zebulon

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McDuffie, W. N.	Hemp
*McElwee, Ross S.	Statesville
McFayden, O. L.	Fayetteville
*McGeachy, R. S.	Raleigh
McGee, Jas. W. (Hon.)	Raleigh
McGehee, Jno. Wm.	Reidsville
McGoogan, Benj. J.	McFarlan
*McGougan, J. V.	Fayetteville
McGowan, Claudius	Plymouth
*McIntosh, D. M.	Old Fort
McIntosh, Leland C.	Henderson
McIntosh, W. R.	Roberdell
McIver, E. M.	Jonesboro
McIver, Lynn	Sanford
*McKay, H. W.	Charlotte
McKay, Jos. F.	Buies Creek
McKay, W. P.	Red Springs
McKee, John S.	Raleigh
McKenzie, B. W.	Salisbury
McKethan, D. G.	Fayetteville
McKethan, Jno. A.	Fayetteville
McLaughlin, C. S.	Charlotte
McLaughlin, J. E.	Statesville
McLean, Allen	Wagram
McLean, Chas. E.	Gastonia
McLean, John W.	Godwin
McLean, Peter	Laurinburg
McLemore, Geo. A.	Clayton, R. F. D.
McLeod, A. H.	Aberdeen
McLeod, G. M.	Carthage
McManus, H. F.	Matthews
McManus, W. L.	Greensboro
McMillan, B. F. (Hon.)	Red Springs
McMillan, J. D. (Hon.)	Edenton
McMillan, J. M.	Candor
McMillan, W. D. (Hon.)	Wilmington
*McNairy, Caroline	Lenoir
McNairy, C. Banks	Kinston
McNeill, Jas. W. (Hon.)	Fayetteville
McPhail, L. D.	Charlotte
McPherson, C. W.	Burlington
McPherson, R. G.	Saxapahaw
McPherson, S. D.	Durham
Macon, G. H.	Warrenton
*Mallett, E. P.	Hendersonville
Malloy, S. A.	Yanceyville
Malone, James E.	Louisburg
Maness, J. M.	Ellerbe
Mangum, C. P.	Kinston
Mann, I. Thurman	High Point
Mann, S. M.	Moyock
*Manning, I. H.	Chapel Hill
Manning, John M. (Hon.)	Durham
Mariner, N. B.	Belhaven
Marr, M. W.	Pinehurst
Marriott, Henry B.	Battleboro
Marsh, Frank B.	Salisbury
*Martin, J. A.	Lumberton
Martin, J. F.	Benson
Martin, J. H.	Battleboro, R.F.D.
Martin, J. W.	Roanoke Rapids
Martin, Lester P.	Mocksville
Martin, Moir S.	Mt. Airy
Martin, Richard E.	East Bend
Martin, Sydnor L.	Leakesville
Martin, W. C.	Mocksville
Martin, Wm. F.	Charlotte
Martin, W. J.	Davidson
Matheson, Jas. P.	Charlotte
Matthews, Jas. O.	Clinton, R. F. D.
Matthews, M. L.	Sanford
Matthews, Vann M.	Charlotte
Matthews, Wm. W.	Spray
Maxwell, C. S.	Beaufort
*Maxwell, H. B.	Whiteville
Maxwell, J. F.	Pink Hill
Mayerberg, I. W.	Selma
Maynard, A. A.	Kerr
Maynard, J. D.	Wadesboro
Meadows, Elijah B.	Oxford, R.F.D.
Meadows, W. J.	Greensboro
Mebane, W. C.	Wilmington
Melvin, Wayman C.	Linden
*Menzies, H. C.	Hickory
Meroney, B. B.	Murphy
Merritt, John H.	Woodsdale, R. 2
Michaux, Edward R.	Greensboro
Milbee, R. O.	Cove City
Miles, May S.	Greensboro
Miller, J. F.	Wilmington
*Miller, Oscar L.	Gastonia
Miller, R. C.	Cramerton
Miller, Robert B.	Goldsboro
*Milliken, J. S.	Southern Pines
Mills, C. H. C.	Charlotte
Mimms, C. W.	Winston-Salem
*Minor, Charles L.	Asheville
*Misenheimer, C. A. (Hon.)	Charlotte

Name	*Address*
Mitchell, Geo. W.	Wilson
Mitchell, Jess H.	Ahoskie
Mitchell, Paul H.	Ahoskie
*Mitchell, R. C.	Raleigh
Mitchell, W. F.	Shelby
Mitchell, Z. P.	Colerain
*Mitchener, J. S.	Raleigh
*Mock, Frank L.	Lexington, R. 3
Monk, Henry L.	Salisbury
*Monroe, J. P.	Sanford
Monroe, W. A. (Hon.)	Sanford
Montague, S. J.	Durham
Montgomery, Harry M.	Burlington
Montgomery, John C.	Charlotte
*Montgomery, K. E.	Waynesville
Moore, Alexander W.	Charlotte
Moore, B. D.	Mt. Holly
Moore, Baxter S.	Charlotte
*Moore, Chas. E.	Greensboro
Moore, Chas. E. (Hon.)	Wilson
Moore, D. B.	Badin
Moore, Edwin G. (Hon.)	Elm City
Moore, Henry B.	Morven
*Moore, James E.	Mt. Olive
Moore, Jos. N.	Marshall
Moore, Julian A.	Wilmington
Moore, K. C.	Wilson
*Moore, Oren	Charlotte
*Moore, R. A.	Winston-Salem
Moore, T. V.	Acme
Moore, W. B.	Brown Summit
Moore, Wm. H.	Wilmington
Moore, Wm. James	Asheboro
Moorefield, R. H.	Westfield, R.F.D. 1
Moorer, M. P.	Asheville
*Morgan, B. E.	Asheville
Morrill, James	Falkland
Morrill, D. S.	Farmville
Morris, Geo. B.	Mt. Olive
*Morris, Jos. A.	Oxford, R.F.D.
Morrow, Wm. C.	Andrews
Morton, J.	Faison
Moseley, Chas. W.	Greensboro
Moseley, H. P.	Farmville
Moseley, Z. V.	Kinston
Moser, W. D.	Burlington
Mudgett, W. C.	Southern Pines
*Munroe, J. P. (Hon.)	Charlotte
Munt, H. F.	Winston-Salem
Murchison, D. R.	Wilminton
Murphy, D. B.	Rutherfordton
*Murphy, John G.	Wilmington
Murphy, W. B.	Snow Hill
*Myers, Alonzo	Charlotte
*Myers, John Q.	Charlotte
Myers, R. W.	Fullers, R. 1
Nalle, B. C.	Charlotte
Nance, C. L.	Charlotte
Nance, Geo. B.	Monroe
Nash, J. Fred	St. Pauls
Neal, Jno. W.	Monroe
Neal, Kemp P.	Raleigh
Neal, Paul N.	Raleigh
Nelson, R. J. (Hon.)	Robersonville
Newbern, J. M.	Jarvisburg
Newby, G. E.	Hertford
Newell, H. A.	Henderson
Newell, J. O.	Louisburg
*Newell, Leone B.	Charlotte
*Newman, Harold H.	Salisbury
*Nichols, Aivon A.	Sylva
*Nichols, Austin F.	Roxboro
*Nichols, Asbury S.	Sylva
Nichols, Rhodes E.	Gorman
Nicholson, C. R.	Harmony
Nicholson, J. L.	Washington
Nicholson, N. G., Jr.	Mt. Gilead
Nicholson, P. A. (Hon.)	Washington
Nicholson, S. T. (Hon.)	Washington
*Nisbet, D. Heath	Charlotte
Nisbet, Walter O.	Charlotte
Noble, R. J. (Hon.)	Selma
Noble, R. P.	Raleigh
Nobles, Jos. E. (Hon.)	Greenville
*Noell, R. H.	Rocky Mount
Nolan, J. V.	Kannapolis
Norfleet, E. P.	Roxobel
Norfleet, L. E.	Tarboro
Norman, Geo. W.	Pomona
Norman, J. H.	Raleigh
Norman, J. S.	Kings Mountain
*Norris, Henry	Rutherfordton
*Northington, J. M.	Charlotte
Oates, George	Grover
O'Briant, A. L.	Cameron
Ogburn, H. H.	Greensboro
Olive, P. W.	Wade

Name	Address
Oliver, A. S.	Benson
*Orr, Chas. C.	Asheville
Orr, C. V.	Andrews
Orr, P. B.	Asheville
Orr, W. J. B.	Iager, W. Va.
*Outland, C. L.	Woodland
Pace, K. B.	Greenville
Packard, F. S.	Norlina
Packard, G. H.	White Rock
Paddison, J. R., Jr.	Kernersville
Page, B. W.	Mayesville
Palmer, B. H.	Shelby
Palmer, Horace	Hollister
Palmer, R. W.	Gulf
Parker, Clifton G.	Woodland
Parker, C. P.	Seaboard
Parker, G. E.	Benson
Parker, J. R.	Clinton
*Parker, Jno. Rainey	Burlington
Parker, O. L.	Clinton
Parker, Paul G.	Jackson
Parker, S. F.	Mount Olive
Parker, Walter R.	Woodland
Parrott, Albert DeK.	Kinston
*Parrott, Jas. M.	Kinston
Parrott, M. C.	Kinston
Parrott, Wm. T.	Kinston
Parsons, W. H.	Charlotte
Patchin, D. F.	Rosemary
Pate, F. J.	Greensboro
Pate, Jas. G.	Gibson
Patrick, Geo. R., Jr.	Bessemer City
Patrick, J. E.	Seven Springs
Patrick, L. N.	Gastonia
*Patterson, Jno. A.	Concord
Patterson, Reid	Charlotte
Payne, R. L.	Monroe
Peck, Edward J.	Hot Springs
Peck, W. A.	Ramseytown
Peeler, Clarence N.	Charlotte
Peeler, Jno. H.	Salisbury
Peete, C. H.	Warrenton
Pemberton, Wm. D. (Hon.)	Concord
Pendleton, Wilson	Asheville
*Pepper, Jno. Kerr	Winston-Salem
Perkins, David R.	Marshville
Perkins, Jno. R.	Winston-Salem
Perkins, S. L.	West Jefferson
*Perry, D. R.	Lexington
Perry, E. M.	Rocky Mt.
Perry, H. B.	Valle Crucis
Perry, H. G.	Louisburg
Perry, M. P. (Hon.)	Macon
Person, Edgar C.	Pikeville
Person, H. M.	Goldsboro
Person, J. B.	Selma
Person, T. E.	Stantonsburg
Peters, W. A.	Elizabeth City
*Peterson, C. A.	Spruce Pine
Peterson, J. M.	Spruce Pine
Peterson, W. C.	Wilmington
*Petrie, Robt. Wm.	Charlotte
Petteway, Geo. H.	Charlotte
Pfohl, Samuel F.	Winston-Salem
Pharr, Wm. W. (Hon)	Charlotte
Phifer, Edward M.	Morganton
*Phillips, C. C.	Charlotte
Phillips, C. H.	Thomasville
Phillips, J. J.	Raleigh
Phillips, J. W.	Dunn
Pickett, John A.	Burlington, R.F.D.
Picot, L. J. (Hon.)	Littleton
Pierce, S. B.	Weldon
Pittman, E. E.	Oak City
Pittman, H. L.	West Durham
Pittman, R. L.	Fayetteville
Pitts, W. I.	Lenoir
Pollard, W. B.	Winton
Poole, Claud T.	St. Pauls
Pope, Henry T.	Lumberton
Powell, H. H.	Stantonsburg
Powell, Jesse A.	Harrellsville
Pressley, Geo. W.	Charlotte
Pressly, J. M.	Belmont
Price, H. L.	Fairmont
Pritchard, Jno. L.	Windsor
*Pritchard, A. T.	Asheville
Proffitt, Thos. J.	Elk Park
*Proctor, I. M.	Raleigh
Pruitt, G. C.	Monroe
Pugh, Chas. H.	Gastonia
Purdy, J. J.	Oriental
Purefoy, Geo. W. (Hon.)	Asheville
Putney, R. H.	Elm City
Query, Richard Z.	Charlotte, R.F.D.
Quickel, Thos. C.	Gastonia
Quillen, Emile B.	Rocky Mount

Name	*Address*
Quinn, Robert F.	Magnolia
Raby, J. G.	Tarboro
*Rainey, W. T.	Fayetteville
Rankin, P. R.	Mount Gilead
Rankin, S. W.	Concord
*Rankin, Watson S.	Raleigh
Ranson, J. Lester	Charlotte
Ray, F. L.	Charlotte
*Ray, John B.	Leakesville
Ray, O. L.	Raleigh, Rt. 1
Ray, R. C.	Beaver Creek
*Reaves, W. P.	Greensboro
*Redfern, T. C.	Winston-Salem
Reece, J. M.	Elkin
Redding, Alex. H.	Cedar Falls
Reed, D. H.	Mooresville
Reed, John F.	Concord
*Reeves, A. F.	Asheville
Reeves, R. J.	Leicester
*Register, F. M.	Raleigh
Reid, Geo. P.	Forest City
Reid, James W.	Lowell
Reid, Thomas N.	Matthews
*Reitzel, C. E.	High Point
*Reynolds, C. V.	Asheville
Reynolds, T. F.	Canton
Rhodes, James S.	Williamston
Rhyne, Robt. E.	Gastonia
Richardson, Jas. C.	Monroe
Richardson, R. W.	Salisbury
Ricks, Leonard E.	Fairmont
*Riddle, J. B.	Morganton
Riggsbee, A. E.	Morrisville
Ring, Joseph W.	Elkin
*Ringer, Paul H.	Asheville
Roberson, Charles	Greensboro
*Roberson, Foy	Durham
Roberson, Geo. B.	Greensboro
Roberts, Frank	Marshall
Roberts, H. C.	Coats
Robertson, James F.	Wilmington
Robinson, Frank	Lowell
Robinson, J. D.	Wallace
*Robinson, W. F.	Mars Hill
Robinson, W. J.	Creston
*Rodman, J. C.	Washington
Rodwell, John W.	Mocksville
Rodgers, W. D., Jr.	Warrenton
Rogers, Jas. Ruffin	Raleigh
Rogers, W. A.	Franklin
*Root, Albert S.	Raleigh
Rose, A. H.	Smithfield
Ross, Geo. H.	Durham
*Ross, Otho B.	Charlotte
Ross, Robt. D.	Wadesboro
Rosser, R. G.	Vass
Rousseau, J. P.	Winston-Salem
Rowe, H. B.	Mount Airy
Rowe, H. E.	Hickory
Rowe, R. H.	Hickory
*Royal, Ben F.	Morehead City
Royall, M. A.	Elkin
*Royster, Hubert A.	Raleigh
Royster, S. S.	Shelby
Royster, Thos. H.	Tarboro
Royster, W. I. (Hon.)	Raleigh
Rucker, A. A.	Green Hill
Rudisell, J. D.	Cherryville
*Russell, C. R.	Granite Falls
Russell, Jesse M.	Canton
Sadler, R. C.	Whiteville
Saine, J. W.	Lincolnton
Saliba, John	Elizabeth City
Saliba, M. M.	Wilson
Salley, E. McQueen	Saluda
Salmons, H. C.	Jonesville
Salmons, L. R.	Winston-Salem
Sample, R. C.	Hendersonville
*Sams, W. A.	Marshall
Saunders, F. A.	Cramerton
Saunders, Jos. H.	Williamston
Saunders, S. A.	Aulander
Sawyer, Chas. J.	Windsor
Sawyer, W. W.	Elizabeth City
Schaub, O. P.	Winston-Salem
*Schenck, D. R.	Rutherfordton
*Schoenheit, E. W.	Asheville
Schonwald, J. T. (Hon.)	Wilmington
Schoonover, R. A.	Greensboro
Schuler, J. E.	East Durham
Scott, Charles L.	Sanford
*Scott, R. C.	Asheville
*Scruggs, F. Bobo	Cliffside
Scruggs, W. H.	Asheville
*Scruggs, W. Marion	Charlotte
Sessoms, E. T.	Autryville
*Sevier, D. E.	Asheville

Name	*Address*
*Sevier, J. T.	Asheville
Sexton, C. Hestor	Dunn
*Shafer, Irving E.	Salisbury
Schallert, P. O.	Winston-Salem
Shamburger, J. B. (Hon.)	Star
Sharpe, C. R.	Lexington
Sharpe, F. A.	Greensboro
Shaver, W. T.	Badin
Shaw, Colin T.	Wilmington
Shaw, W. G.	Wagram
Shellum, O. W.	Lowesville
*Shepard, F. H.	Liberty
*Sherrill, C. L.	Statesville
Shields, Henry B.	Carthage
Shipp, Geo. W.	Newton
*Shirley, H. C.	Charlotte
*Shore, Clarence A.	Raleigh
*Shuford, Jacob H.	Hickory
Shugart, F. C.	High Point
Shull, J. Rush	Charlotte
Shreve, J. R.	Brown Summit
*Sidbury, J. B.	Wilmington
Sigman, F. G.	Spencer
Sikes, G. T. (Hon.)	Creedmore
*Siler, Fred L.	Franklin
Simmons, John O.	Charlotte
Simmonds, L. L.	Greensboro
Singletary, G. C.	Clarkton
Sink, C. S.	N. Wilkesboro
Sisk, C. N.	Winston-Salem
Skinner, Louis C.	Greenville
Slate, John S.	Winston-Salem
Slate, Wesley C.	Spencer
*Sloan, D. B.	Wilmington
*Sloan, H. L.	Charlotte
Sloan, James M.	Gastonia
Sloan, Wm. H.	Garland
Slocum, R. B.	Wilmington
Sloop, Eustace H.	Crossnore
Small, Victor R.	Raleigh
Smith, A. Jones	Black Creek
Smith, Alick T.	Greensboro
*Smith, B. R.	Asheville
Smith, C. T.	Rocky Mount
Smith, G. M.	Monroe
Smith, J. A.	Lexington
Smith, James B.	Pilot Mountain
Smith, James T.	Westfield
Smith, John McN.	Rowland
Smith, Jos. E.	Windsor
Smith, L. J.	Wilson
Smith, O. F.	Scotland Neck
Smith, Owen	High Point
Smith, R. A. (Hon.)	Goldsboro
Smith, Robt. W.	Hertford
Smith, Slade A.	Wilmington
Smith, W. F.	Chadbourn
*Smith, Wm. H.	Goldsboro
Smithwick, Jas. E.	Jamesville
Smoot, J. E.	Concord
Snipes, E. P. (Hon.)	Jonesboro
Somers, L. P.	New Castle
*Sossomon, J. C.	Midland
Spainhour, Ellis H.	Winston-Salem
Sparrow, Thos. D.	Charlotte
Speas, W. P.	Hickory
Speed, J. A.	Durham
Speight, J. A.	Rocky Mount
Speight, J. P.	Rocky Mount
Speight, John W.	Roper
Speight, R. H., Sr. (Hon.)	Whitakers
Spencer, Frederick B.	Salisbury
Spencer, Wm. O.	Winston-Salem
Spicer, John	Goldsboro
Spicer, Richard W.	Goldsboro
Spicer, William	Goldsboro
Spoon, Chas. E.	Graham
Spoon, S. C.	Graham
Sprinkle, C. N.	Weaverville
*Spruill, Jos. L.	Sanatorium
Squires, Claude	Charlotte
Staley, S. Walter	Rocky Mount
Stamps, Thos. (Hon.)	Lumber Bridge
Stancill, Wm. W.	Raleigh
*Stanford, R. W.	Durham
Stanley, John H.	Four Oaks
*Stanton, D. A. (Hon.)	High Point
Stanton, T. M.	High Point
*Starr, H. F.	Greensboro
*Stevens, M. L. (Hon.)	Asheville
Stephens, W. L.	Shiloh
*Sterling, W. C.	Winston-Salem
Sterrett, J. R.	West Durham
Stevens, M. L.	Elm City
Stevens, R. L.	Princeton
Stevens, Samuel A.	Monroe
Stevenson, T. T.	Hickory
Stewart, H. D.	Monroe

Name	*Address*
Stewart, J. T.	Summerfield, R. F. D.
*Stokes, Jas. E.	Salisbury
Stokes, P. B.	Ruffin
Stone, Grady E.	King
Stone, Wesley M.	Dobson
Storie, J. G.	Proctor
Street, M. E.	Glendon
Strickland, E. F.	Bethania
Strickland, E. L.	Wilson
Strickland, W. M.	Wendell
Stringfellow, Jas. L.	Sunburst
*Stringfield, S. L.	Sunburst
Stringfield, Thomas	Waynesville
*Strong, Chas. M.	Charlotte
Strong, Wm. M.	Charlotte
Strosnider, Chas. F.	Goldsboro
Suiter, W. G.	Weldon
Summerell, E. M. (Hon.)	China Grove
Summerell, G. H.	Ayden
Summers, Chas. L.	Baltimore, Md.
*Summey, T. J.	Brevard
*Sumner, Thos. W.	Fletcher
*Sumner, Wm. I.	Randleman
Surles, J. B.	Four Oaks
Sutton, Carl W.	Richlands
Sutton, Wm. G.	Seven Springs
Swann, Jos. F.	Gastonia
Sweaney, H. M.	Durham
Sweaney, John	West Durham
Swindell, C. L.	Beaufort
Swindell, Lewis H.	Washington
Sykes, Gibson L.	Salemburg
Tally, B. T.	Elizabethtown
Tally, J. S.	Troutman
Tankersley, J. W.	Greensboro
*Tate, C. S.	Ramseur
*Tate, W. C.	Banner Elk
*Tayloe, D. T. (Hon.)	Washington
*Tayloe, D. T., Jr.	Washington
Tayloe, Joshua	Washington
Taylor, B. C.	Mount Holly
*Taylor, F. R.	High Point
Taylor, G. W.	Mooresville
Taylor, H. C.	Charlotte (Chadwick Sta.)
Taylor, James N.	Burlington
Taylor, James T.	Madison
Taylor, T. G.	Leaksville
Taylor, W. I.	Burgaw
Taylor, Wm. S.	Mount Airy
Teague, S. E.	Goldsboro
*Templeton, James M.	Cary
*Tennent, G. S.	Asheville
Terry, J. R.	Lexington
*Terry, P. R.	Asheville
Terry, Wm. Calvin	Hamlet
Thaxton, B. A.	Roxboro
Thigpen, H. G.	Scotland Neck
Thigpen, Wm. J.	Tarboro
Thomas, J. G.	Greensboro
Thomas, W. Clyde	Siler City
Thomas, Wm. N.	Oxford
Thompson, C. D.	Lexington
*Thompson, A. C.	Asheville
Thompson, A. F.	Troy
*Thompson, Cyrus	Jacksonviille
Thompson, Fred	Pine Bluff
Thompson, Hugh A.	Raleigh
Thompson, Joseph	Creedmore
Thompson, E. S.,	Winston-Salem
Thompson, J. R.	Lake Waccamaw
*Thompson, S. R.	Charlotte
Thompson, S. W.	Wake Forest
Thompson, S. W., Jr.	Morehead City
Thompson, W. A.	Rutherfordton
Thorpe, A. T.	Rocky Mount
Thurston, Asa	Taylorsville
Tidmarsh, H. W.	Whittier
Tidwell, J. E.	Andrews
Tillotson, S. F.	King
*Tilson, Jacob C.	Marshall
Timberlake, C. V.	Youngsville
Timberlake, R. E.	Youngsville
*Todd, L. C.	Charlotte
*Toole, A. F.	Asheville
*Townsend, M. L.	Charlotte
Trantham, H. T. (Hon.)	Salisbury
Triplett, W. R.	Purlear
Troxler, R. M.	Burlington
Tucker, Jno. H.	Charlotte
Tugman, B. W.	Warrensville
Tull, Henry (Hon.)	Kinston
Turlington, H. C.	Dunn
Turner, J. M.	North Wilkesboro
Turner, J. P.	Greensboro
Tuttle, A. F.	Spray
Tuttle, Reuben G.	Walnut Cove

Name	*Address*
*Twitty, John C.	Rutherfordton
Tydeman, F. W. L.	Wood River, Ill.
Tyner, Carl V.	Smithfield
Tyson, T. D.	Mebane
Underwood, O. E.	Roseboro
Upchurch, C. G.	Moncure
Upchurch, Robt. T.	Henderson
*Valk, A. deT.	Winston-Salem
Vann, H. M.	Wake Forest
Vann, J. R., Jr.	Fayetteville
*Van Poole, C. M. (Hon.)	Salisbury
Van Winkle, C. C.	Greensboro
Vaughan, J. C.	Rich Square
*Verdery, W. C.	Fayetteville
*Vernon, Jas. W.	Morganton
Vestal, Willis J.	Lexington
Vick, Geo. D.	Selma
Wadsworth, H. B.	New Bern
Wadsworth, Wm. H.	Concord
Wakefield, Harry A.	Charlotte
Wakefield, Wm. H.	Charlotte
Walker, H. D.	Elizabeth City
Walker, J. B.	Gibsonville
Walker, L. A.	Burlington
*Walker, L. D.	Charlotte
Walker, L. K.	Ahoskie
Walker, Walter E.	Burlington
*Walters, Chas. M.	Burlington
Ward, Vernon A.	Robersonville
Ward, I. A.	Belvidere
Ward, Jess E.	Robersonville
*Ward, John LaB.	Asheville
Ward, Wm. H. (Hon.)	Plymouth
*Ware, D. B.	Asheville
Waring, E. S.	Raleigh
Warren, R. F.	Prospect Hill
Warren, R. L.	Dunn
Warren, Wm. E.	Williamston
Washburn, B. E.	Kingston, Jamica
*Watkins, Finso B.	Morganton
Watkins, Geo. S.	Oxford
*Watkins, G. T.	Durham
Watson, John B.	Raleigh
Watson, Leon	Broadway
*Way, J. Howell (Hon.)	Waynesville
Weathers, Bahnson	Wilmington
*Weaver, Henry B. (Hon.)	Asheville
*Weaver, W. J.	Asheville
Webb, B. G.	Andrews
Webb, S. Edgar	Draper
Wellborn, Wm. R.	Elkin
Wessell, John C.	Wilmington
West, C. F.	Kinston
West, Louis N.	Raleigh
West, Robert M.	Salisbury
West, T. M.	Fayetteville
Weyher, V. E.	Kinston
Wharton, Chas. R.	Ruffin
Wharton, L. D.	Smithfield
Wheeler, J. H.	Henderson
Whelpley, Frank L.	Goldsboro
Whichard, M. P.	Edenton
*Whisnant, Albert M.	Charlotte
Whitaker, A. C.	Julian
Whitaker, F. S.	Kinston
Whitaker, R. A. (Hon.)	Kinston
Whitaker, R. B.	Whiteville
White, John W. (Hon.)	Wilkesboro
*White, R. A.	Asheville
White, W. M.	Lenoir
Whitehead, John (Hon.)	Salisbury
Wiggins, J. C.	Winson-Salem
Whitehead, S. L.	Lumberton
Whitehurst, E. B.	Marshallberg
Whitfield, Wm. Cobb (Hon.)	Grifton
Whitley, A. D. N.	Unionville
Whitley, A. W.	Matthews
Whittington, W. W.	Snow Hill
*Whittington, James B.	Winston-Salem
*Whittington, W. P. (Hon.)	Asheville
Wilcox, J. W.	Laurel Hill
Wilkerson, Charles E.	Randleman
Wilkerson, Charles B.	Raleigh
Wilkerson, T. E., Jr.	Raleigh
Wilkes, Grover C.	Sylva
Wilkes, Marcus B.	Laurel Hill
Wilkins, J. C.	Haw River
Wilkins, R. B.	Raeford
Wilkins, Samuel A.	Dallas
Wilkins, J. W.	Mount Olive
Williams, Alfred F.	Wilson
Williams, B. B.	Greensboro
Williams, Claude B.	Elizabeth City
Williams, Edward J.	Monroe
Williams, Jabez H.	Sanatorium

Name	*Address*
Williams, James Marcus	Warsaw
*Williams, John A.	Greensboro
Williams, John D.	Guilford Station
Williams, John W.	Washington
*Williams, Lester L.	Mt. Airy
Williams, L. P.	Wilmington
Williams, R. C.	Wallace
*Willis, A. P.	Candler
Willis, B. C.	Rocky Mount
Wilson, Albert R. (Hon.)	Greensboro
Wilson, Clarence L.	Lenoir
Wilson, J. E.	Canton, R. F. D.
Wilson, Robert B.	Newton Grove
*Wilson, R. G.	Asheville
Wilson, W. P.	Madison
Wimberly, G. L.	Rocky Mount
Windley, C. T.	Belhaven
Wingate, G. C.	Charlotte
Winstead, J. A.	Nashville
Wishart, Wm. E.	Charlotte
Witherspoon, B. J.	Charlotte
Wolfe, H. C.	Greensboro
Wolff, D. R.	Greensboro
Woltz, John L.	Mt. Airy
Wood, E. J.	Wilmington
Wood, J. W.	Shelby, Rt. 3
Woodard, A. G.	Goldsboro
Woodard, E. D.	Bayboro
Woodard, C. A.	Wilson
Woodard, G. B.	Kenly
Woodcock, John H.	Koch, Mo. (Robert Koch Hospital)
Woodley, C. B.	Kinston
Woodruff, Fred G.	High Point
Woodruff, Julian S.	Charlotte
Woodson, Charles W.	Salisbury
Wooten, Amos Monroe	Pinetops
Wooten, Floyd P.	Kinston
*Worthington, F. D.	Charlotte
*Wright, J. B.	Raleigh
Wright, Thomas H.	Charlotte
Wyatt, Jas. L.	Lilesville
Wyatt, Wortham	Winston-Salem
Wynkoop, D. W.	Beaufort
Wysong, Homer C.	Wilmington
Yarborough, R. F.	Louisburg
Yokeley, Raymond V.	Thomasville
York, Alexander Arthur	Southmont
York, Hugh B.	Williamston
York, N. D.	Mebane
Young, G. M.	Postell
Young, J. J.	Clayton
Young, L. B.	Wake Forest (R. 3)
*Yow, I. A.	Georgeville
Zimmerman, Robt. U.	Lexington (R. 4)
Zollicoffer, D. B.	Weldon

ROSTER OF MEMBERS FOR 1923

BY COUNTIES

NOTE—Every physician in the State whose name we could secure has had an opportunity to supply correct information as to his name, postoffice, academic and medical education, date of State license and date State Society was joined. A few did not take advantage of the opportunity, however. Anyone finding an error should report it to the Secretary of the Society.

ALAMANCE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, T. D. Tyson, Mebane, Univ. Coll. of Med., Richmond, 1899	1899	1904
Secretary, R. E. Brooks, Burlington, Jeff. Med. Coll., 1919	1920	1922
Anderson, C. A., Burlington, P. and S., Balt., 1901	1893	1896
Caddell, S. W., Elon College, Univ. of Tenn., 1892	1892	1914
Faucette, T. S., Burlington, Balt. Med. Coll., 1892	1893	1900
Freeman, R. A., Burlington (Hon.), Wash. Univ. 1870	1879	1891
Goley, Wm. R., Graham, P. and S., Balt., 1885	1885	1893
Harden, G., Burlington, U. of P., 1919	1920	1922
Isley, W. L., Burlington, Route 1, U. of Tenn., 1899	1899	1922
Kernodle, C. E., Elon College, U. of Md., 1911	1911	1920
McDade, B. B., Corbett, Rt. 1, Univ. of Md., 1918	1918	1920
McPherson, C. W., Burlington, Univ. of Md., 1910	1910	1912
McPherson, R. G., Saxapahaw, Univ. of N. C., 1908	1908	1909
Montgomery, H. M., Burlington, N. C. Med. Coll., 1903	1903	1904
Moser, W. D., Burlington, Univ. of N. C., 1910	1910	1910
Parker, J. R., Burlington, Univ. Coll. of Med., Richmond, 1901	1901	1917
Pickett, John A., Burlington, R. F. D., Univ. of Nashville, 1894	1894	1904
Spoon, C. E., Graham, Univ. of Tenn., 1907	1914	1920
Spoon, S. C., Graham, Univ. of Md., 1918	1918	1920
Taylor, J. N., Burlington, Med. Coll. of Va., 1901	1901	1905
Troxler, R. M., Burlington, Univ. of Md., 1914	1914	1915
Walker, L. A., Burlington, Univ. Coll. of Med., Va., 1898	1899	1905
Walker, W. E., Burlington, Med. Coll. of Va., 1903	1903	1905
Walters, C. M., Burlington, Univ. of Md. and P. and S., Balt., 1908	1908	1909
Warren, R. F., Prospect Hill, Atlanta School of Med., 1911	1911	1919
Wilkins, J. C., Haw River, Univ. of Md., 1911	1911	1920
York, N. D., Mebane, Louisville Med. Coll., 1878	1878	1885

ALLEGHANY COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Choate, B. O., Sparta, Med. Coll. of Va., 1908	1908	1910

ANSON COUNTY SOCIETY

President, Robert D. Ross, Wadesboro, N. Y. Univ., 1890	1890	1912
Secretary, John E. Hart, Wadesboro, P. and S., Balt., 1897	1897	1904
Allen, Chas. I., Wadesboro, Univ. of N. Y., 1913	1913	1922
Ashe, E. S., Wadesboro, P. and S., Balt., 1885	1885	1904

Name and Address	*Licensed*	*Joined State Society*
Bennett, Jos. H., Wadesboro, Univ. of Md., 1894	1894	1904
Boyce, J. M., Wadesboro, Davidson Med. School, 1903	1903	1923
Covington, Platt W., Wadesboro, U. of Med., 1908	1908	1914
Harris, C. F., Ansonville, Jeff. Med. Coll., 1920	1920	1923
McGoogan, Benj. J., McFarlan, Univ. of Md., 1912	1912	1923
Maynard, J. D., Wadesboro, Univ. of N. C., 1908	1908	1922
Moore, H. B., Morven, Jeff. Med. Coll., 1920	1920	1923
Wyatt, James L., Lilesville, Phil. Med.-Chir. Coll., 1905	1905	1913

ASHE COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Brooks, Hugh M., Whitetops, Va.	----	1919
Hagaman, J. B., Todd, Lincoln Memorial Univ., 1915	1915	1915
Jones, Thomas J., Lansing, Lincoln Memorial Univ., 1895	----	1885
Jones, T. Lester, Lansing, Med. Coll. Va., 1909	1909	1917
Perkins, S .L., West Jefferson, Balt. Med. Coll., 1891	1892	1917
Ray, R. C., Beaver Creek, Med. Coll. of Va., 1916	1916	1917
Robinson, W. J., Creston, Univ. Med. Coll., Kansas City, 1904	1907	1917
Tugman, B. W., Warrensville	----	1917

AVERY COUNTY SOCIETY

President, W. C. Tate, Banner Elk, Tenn. Med. Coll., 1908	1909	1912
Secretary, W. B. Burleson, Plumtree, Univ. Md. and Coll., P. and S., Balt., 1915	1916	1915
Hodges, J. M., Cranberry, Univ. of Md., 1904	1906	1914
Proffitt, Thomas J., Elk Park, Louisville Med. Coll., 1902	1903	1914
Sloop, E. H., Crossnore, N. C. Med. Coll., 1905, Jeff., 1908	1905	1909

BEAUFORT COUNTY SOCIETY

President, DeWitt Kluttz, Washington, Univ. of Penn., 1918	1919	1920
Secretary, Lewis H. Swindell, Washington, Univ. of Penna., 1916	1916	1919
Bonner, J. B., Aurora, Univ. of Md., 1918	1918	1920
Brown, E. M., Washington, Bellevue, 1896	1896	1901
Carter, H. W., Washington, Univ. of Va., 1895	1895	1910
Jackson, C. C., Yeatesville, P. and S., Balt., 1893	1893	1896
Kafer, Oswald O., Edward, Univ. of Md., 1905	1905	1912
McClees, James E., Pinetown, Med. Coll. of Va., 1916	1919	1920
Nicholson, J. L., Washington, Univ. of N. Y., 1875	1880	1904
Nicholson, P. A., Washington (Hon.), P. and S., Balt., 1889	1889	1890
Nicholson, S. T., Washington (Hon.), P. and S., Balt., 1881	1885	1885
Rodman, J. C., Washington, Bellevue, 1892	1892	1895
Tayloe, D. T., Washington (Hon.), Bellevue, 1885	1885	1885
Tayloe, D. T., Jr., Washington, Univ. of Penna., 1919	1919	1922
Tayloe, Joshua, Washington, Bellevue, 1892	1892	1904
Williams, John W., Washington, Univ. of Md., 1906	1906	1906
Windley, C. T., Belhaven, P. and S., Balt., 1893	1893	1910

BERTIE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, H. W. Lyon, Windsor, Univ. of Penn., 1918	1919	1920
Secretary, E. P. Norfleet, Roxobel, Med. Coll. of Va., 1914	1914	1920
Capehart, A., Roxobel	1887	1905
Evans, L. B., Windsor, Med. Coll. of Va., 1900	1900	1907
Garriss, F. H., Lewiston, Jeff. Med. Coll., 1912	1912	1918
Mitchell, Z. P., Colerain, Med. Coll. of Va., 1920	1920	1921
Pritchard, J. L., Windsor, P. and S., Balt., 1906	1906	1908
Saunders, S. A., Aulander, Jeff. Med. Coll., 1914	1914	1918
Sawyer, C. J., Windsor, P. and S., Balt., 1895	1895	1897
Smith, J. E., Windsor, Med. Coll. of Va., 1920	1921	1922

BLADEN COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Bullard, G. F., Elizabethtown, N. C. Med. Coll., 1915	1915	1916
Hutchinson, S. S., Bladenboro, N. C. Med. Coll., 1900	1911	1917
Singletary, G. C., Clarkton, Univ. of Penna., 1917	1917	1918
Tally, B. T., Elizabethtown, Jeff. Med. Coll., 1921	1921	1922

BRUNSWICK COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Goley, Wm. R., Shallotte, Univ. Coll. of Med., Richmond, 1901	1901	1904

BUNCOMBE COUNTY SOCIETY

President, C. H. Cocke, Asheville, Cornell Univ., 1905	1912	1913
Secretary, A. F. Toole, Asheville, Univ. of Va., 1900	1917	1918
Adams, J. L., Asheville, Jeff. Med. Coll., 1910	1910	1913
Alexander, George, Asheville, Univ. of Louisville, 1913	1920	1921
Ambler, Arthur C., Asheville, Jeff. Med. Coll., 1920	1921	1922
Ambler, C. P., Asheville (Hon.), West. Reserve Univ., 1889	1890	1891
Anderson, J. G., Asheville, Univ. of N. C., 1906	1906	1910
Archer, I. J., Black Mountain, Northwestern, 1896	1905	1907
Bailey, K. H., Oteen, Univ. of Penna., 1919	1919	1920
Baker, W. E., Arden, Chattanooga Med. Coll., 1908	1915	1916
Battle, G. C., Asheville, Univ. of Md., 1912	1912	1912
Beall, L. G., Asheville, N. C. Med. Coll., 1906, Univ. of Penna., 1911	1906	1912
Beers, Charles, Asheville, Med. Coll. of Ohio, 1896	1918	1920
Bisch, Louis E., Asheville, Columbia Coll. P. and S., 1911	1919	1919
Bown, H. H., Asheville, Columbus, O., Med. Coll., 1892	1917	1918
Briggs, H. H., Asheville, Yale Univ. Sch. of Med., 1897	1901	1903
Brookshire, H. G., Asheville, N. C. Med. Coll., 1905	1905	1907
Broun, M. S., Asheville, Columbia Univ., 1919	1919	1923
Brownson, Wm. C., Asheville, Univ. of N. Y., 1878	1885	1885
Buckner, J. M., Swannanoa, Univ. of N. C., 1908	1909	1912
Buckner, R. G., Asheville, Univ. of Ark., 1897	1907	1909

Name and Address	*Licensed*	*Joined State Society*
Calloway, A. W., Asheville, Chicago Med. School, Harvard Univ. Med. School, 1895	1899	1904
Carroll, J. L., Asheville, Louisville Med. Coll., 1905	1905	1905
Chambers, P. P., Asheville, Med. Coll. of S. C., 1907	1907	1923
Cheadle, C. M., Asheville, Keokuk Med. Coll., 1898	1919	1921
Cheesborough, T. P., Asheville, Univ. of N. Y., 1891	1891	1900
Cocke, E. R., Asheville, Jeff. Med. Coll., 1913	1914	1917
Cocke, J. E., Asheville, Louisville Med. Coll., 1905	1905	1907
Colby, C. DeW., Asheville, Univ. of Mich., 1893, Army Med. School, 1895	1909	1912
Cotten, C. E., Asheville, Northwestern, 1889	1901	1901
Denchfield, A. L., Asheville, Univ. and Bellevue Hosp., N. Y., 1905	1914	1916
Dunn, W. L., Asheville, Univ. of Mich., 1891	1900	1900
Eckel, O. F., Asheville, Med. Coll. of S. C., 1906	1907	1909
Edwards, B. O., Asheville, N. C. Med. Coll., 1905	1905	1909
Edwards, C. P., Asheville, Tenn. Med. Coll., 1900	1903	1921
Elias, L. W., Asheville, Columbia Univ., 1903	1906	1907
Flack, R. E., Asheville, Johns Hopkins, 1913	1913	1914
Fletcher, M. H., Asheville (Hon.), Bellevue, 1881	1881	1882
Folsom, T. W., Asheville, Univ. of Penna., 1921	1921	1923
Frazer, H. Thompson, Asheville, Coll. of Phys., N. Y., 1901	1908	1909
Fresh, W. M., Weaverville, Med.-Chir. Coll. of Phila., 1906	1913	1919
Gardner, G. D., Asheville, Lincoln Mem. Univ., 1908	1908	1909
Glenn, Eugene B., Asheville, Jeff. Med. Coll., 1896	1896	1900
Grantham, Wm. L., Asheville, N. C. Med. Coll., 1906	1906	1911
Greene, Jos. B., Asheville, Univ. of Va., 1893	1910	1911
Greenwood, A. B., Asheville, Johns Hopkins, 1916	1916	1918
Griffin, M. A., Asheville, Jeff. Med. Coll., 1917	1917	1918
Griffin, W. R., Asheville, Jeff. Med. Coll., 1910	1910	1917
Griffith, F. W., Asheville, Johns Hopkins, 1906	1911	1912
Griffith, L. M., Asheville, Johns Hopkins, 1916	1916	1917
Harrison, H. H., Asheville, Jeff. Med. Coll., 1905	1905	1918
Herbert, Wm. P., Asheville, Univ. of Va., 1907	1910	1911
Hipps, A. G. T., Asheville, Jeff. Med. Coll., 1916	1916	1920
Hollyday, W. M., Asheville, Univ. of Md., 1908	1914	1915
Hunnicutt, Wm. J., Asheville, Univ. of Tenn., 1895	1908	1909
Huston, J. W., Asheville, Rush, Chicago, 1904	1912	1913
Ivey, R. R., U. S. P. H. S., Biltmore, Univ. of Ala., 1909	1921	1921
Jordan, C. S., Asheville, Univ. of N. Y., 1890	1891	1899
King, Edward, Asheville, Harvard Univ. Med. Sch., 1917	1921	1922
Knoefel, A. E., Black Mountain, Univ. of Louisville, 1893	1914	1916
Long, Roy C., Asheville, Univ. of Tenn., 1912	1921	1921
Lord, Marjery J., Asheville, Univ. of Mich., 1916	1918	1918
Lynch, J. M., Asheville, Univ. of Md., 1904	1912	1913
MacPherson, G. S., Asheville, Harvard Univ. Med. Sch., 1894	1919	1920
MacRae, J. D., Asheville, Univ. of Nashville, 1897	----	1920
McCall, A. C., Asheville, Univ. of Md., 1910	1910	1912
McCracken, C. M., Fairview, N. C. Med. Coll., 1896	1896	1904
Minor, C. L., Asheville, Univ. of Va., 1888	1895	1898

Name and Address	*Licensed*	*Joined State Society*
Moorer, M. P., Asheville, Med. Coll. of S. C., 1901	1903	1923
Morgan, B. E., Asheville, Univ. of Tenn., 1917	1921	1921
Orr, C. C., Asheville, Univ. of Md., 1904	1904	1905
Orr, P. B., Asheville, Jeff. Med. Coll., 1901	1901	1904
Pendleton, W., Asheville, Univ. of Va., 1908	1919	1920
Pritchard, A. T., Asheville, Jeff. Med. Coll., 1905	1905	1907
Purefoy, G. W., Asheville (Hon.), Jeff. Med. Coll., 1876	1884	1884
Reeves, A. F., Asheville, Geo. Washington Univ., 1906	1909	1910
Reeves, R. J., Leicester, Univ. of Tenn., 1913	1913	1922
Reynolds, C. V., Asheville, Univ. of N. Y., 1895	1895	1896
Ringer, Paul H., Asheville, P. and S., N. Y., 1904	1906	1907
Schoenheit, E. W., Asheville, Jeff. Med. Coll., 1920	1920	1921
Scott, R. C., Asheville, Jeff. Med. Coll., 1902	1916	1919
Scruggs, W. H., Asheville, Univ. of Md., 1913	1915	1917
Sevier, D. E., Asheville, Jeff. Med. Coll., 1895	1895	1899
Sevier, J. T., Asheville, Jeff. Med. Coll., 1895	1895	1899
Smith, B. R., Asheville, Jeff. Med. Coll., 1911	1913	1914
Sprinkle, C. N., Weaverville, Jeff. Med. Coll., 1910	1910	1922
Stevens, M. L., Asheville (Hon.), Balt. Med. Coll., 1891	1892	1893
Tennent, G. S., Asheville, N. C. Med. Coll., 1894	1894	1898
Terry, P. R., Asheville, George Washington Univ., 1906	1912	1913
Thompson, A. C., Asheville, Georgetown Univ., 1911	1921	1922
Ward, John LaB., Asheville, Med. Coll. of S. C., 1905	1921	1922
Ware, D. B., Asheville, Univ. of Georgia, 1898	1898	1923
Weaver, H. B., Asheville (Hon.), Washington Univ., Balt., 1872	1881	1882
Weaver, W. J., Asheville, Jeff. Med. Coll., 1898	1898	1915
White, R. A., Asheville, Univ. of Cincinnati, 1918	1920	1921
Whittington, W. P., Asheville (Hon.), P. and S., Balt., 1882	1882	1882
Willis, A. P., Candler, Univ. of N. C., 1904	1904	1919
Wilson, R. G., Asheville, Univ. of Penna., 1919	1919	1921
Woodcock, John H., Koch, Mo., Coll. of Med., Ky., 1892	1894	1899

BURKE COUNTY SOCIETY

President, B. L. Long, Glen Alpine, N. C. Med. Coll., 1913	1913	1914
Secretary, G. M. Billings, Morganton, Tulane Univ. of La., 1919	1919	1920
Bristow, C. O., Morganton, Jeff. Med. Coll., 1918	1920	1921
Foard, F. O., Connelly Springs, Chicago Med. Coll., 1915	1915	1923
Futrell, W. E., Morganton, Jeff. Med. Coll., 1921	1922	1923
Gayle, E. M., Richmond, Va.; Univ. of Va., 1902	1902	1902
Griffin, T. A., Morganton, Univ. of Md., 1912	1913	1923
Kibler, W. H., Morganton, Univ. of Penna., 1914	1914	1918
Kirksey, James, Morganton, Univ. of Penna., 1921	1921	1923
Long, R. H., Morganton, Jeff. Med. Coll., 1916	1922	1923
McCampbell, John, Morganton, Balt. Med. Coll., 1894	1895	1899
Phifer, Edward M., Morganton, N. C. Med. Coll., 1901	1902	1904
Riddle, J. B., Morganton, Vanderbilt Univ., 1898	1904	1904
Vernon, James W., Morganton, Jeff. Med. Coll., 1909	1909	1913
Watkins, F. B., Morganton, Jeff. Med. Coll., 1907	1907	1910

Name and Address	*Licensed*	*Joined State Society*
CABARRUS COUNTY SOCIETY		
President, J. A. Patterson,, Concord, Univ. Coll. of Med., Richmond, 1911	1911	1912
Secretary, J. A. Hartsell, Concord, Jeff. Med. Coll., 1912	1914	1916
Bangle, J. A., Concord, Med. Coll. of Richmond, 1916	1916	1919
Buchanan, S. E., Concord, Univ. of Md., 1912	1912	1914
Bunn, J. J., Mount Pleasant, N. C. Med. Coll., 1912	1913	1915
Burleyson, L.N., Concord, Univ. of Md., 1891	1891	1906
Caldwell, D. G., Concord (Hon.), Univ. of Md., 1885	1885	1885
Cauble, H. H., Kannapolis, N. C. Med. Coll., 1907	1907	1911
Cease, Harry, Johnson City, Tenn., Univ. of Tenn., 1894	1919	1922
Flowe, R. Frank, Kannapolis, N. C. Med. Coll., 1913	1914	1915
Foil, M. A., Mount Pleasant, Jeff. Med. Coll., 1891	1891	1905
Gouger, George J., Concord, Univ. of Md., 1891	1891	1899
King, Richard M., Concord, Jeff. Med. Coll., 1903	1903	1907
Lubchenko, N. E., Harrisburg, N. C. Med. Coll., 1915	1915	1916
MacFadyen, Paul R., Concord, Med. Coll. of Va., 1901	1901	1904
Nolan, J. V., Kannapolis, Jeff. Med. Coll., 1921	1921	1922
Pemberton, Wm. D., Concord (Hon.), Univ. of Md., 1887	1887	1887
Rankin, S. W., Concord, Jeff. Med. Coll., 1912	1912	1914
Reed, John F., Concord, Univ. of N. Y., 1893	1909	1912
Smoot, J. E., Concord, Balt. Med. Coll., 1893	1894	1902
Sossomon, J. C., Midland, N. C. Med. Coll., 1915	1917	1918
Wadsworth, Wm. H., Concord, Jeff. Med. Coll., 1911	1913	1913
Yow, I. A., Georgeville, N. C. Med. Coll., 1906	1907	1910
CALDWELL COUNTY SOCIETY		
President,	----	----
Secretary,	----	----
Coffey, Lawrence H., Lenoir, Med. Coll. of Va., 1906	1906	1913
Corpening, O. J., Granite Falls, Univ. Coll. of Med., Richmond, 1906	1906	1907
Goodman, A. B., Lenoir, N. C. Med. Coll., 1898	1897	1910
Hickman, M. T., Hudson, Univ. of Va., 1909	1909	1910
Houck, Albert F., Lenoir, P. and S., Balt., 1884	1891	1893
Kent, A. A., Lenoir, Jeff. Med. Coll., 1885	1885	1894
McNairy, Caroline, Lenoir, Woman's Med. Coll. of Penna., 1917	1917	1919
Pitts, W. I., Lenoir, Univ. of the South, Sewanee, 1903	1911	1913
Russell, C. R., Granite Falls, Univ. Coll. of Med., Richmond, 1909	1909	1918
Storie, J. G., Proctor, Tenn. Med. Coll., 1898	1898	1908
White, W. M., Lenoir, Atlanta Coll. P. and S., 1899	1899	1905
Wilson, C. L., Lenoir, Grant Univ., 1903	1903	1905
CARTERET COUNTY SOCIETY		
President, C. L. Swindell, Beaufort, Univ. of Md., 1909	1909	1920
Secretary	----	----
Ball, M. W., Newport, Atlanta School of Med., 1909	1911	1913
Bonner, K. P. B., Raleigh, Med. Coll. of Va., 1905	1905	1905
Davis, George, Beaufort, Univ. of Ky., 1894	1896	1904

Name and Address	*Licensed*	*Joined State Society*
Davis, J. J., Atlantic, Univ. of Md., 1891	1891	1916
Duncan, Chas. L., Beaufort, Univ. of Md., 1902	1902	1904
Ferebee, C. G., Morehead City, Med. Coll. of Va., 1902	1904	1904
Maxwell, C. S., Beaufort, Univ. of the South, Sewanee, 1900	1899	1904
Royal, Ben F., Morehead City, Jeff. Med. Coll., 1909	1909	1909
Thompson, S. W., Jr., Morehead City, Med. Coll. of Va., 1913	1913	1922
Whitehurst, E. B., Marshallberg, Med. Coll. of Va., 1917	1917	1920
Wynkoop, D. W., Beaufort, P. and S., New York, 1896	1896	1923

CASWELL COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Malloy, S. A., Yanceyville, Ky. School of Med., 1897	1898	1903

CATAWBA COUNTY SOCIETY

President, T. C. Blackburn, Hickory, Balt. Med. Coll., 1896	1896	1909
Secretary, W. G. Bandy, Maiden, Vanderbilt Univ., 1908	1912	1916
Campbell, J. R., Newton, Univ. of Md., 1876	1885	1898
Cochrane, J. D., Newton, Univ. of Md., 1912	1912	1923
Flowers, G. E., Hickory, Sou. Med. Coll., Atlanta, 1884	1880	1904
Foard, F. T., Hickory, Univ. of Ky., 1879	1879	1904
Frye, Glenn R., Hickory, Jeff. Med. Coll., 1921	1921	1923
Hollar, O. L., Hickory, Balt. Med. Coll., 1892	1898	1920
Hunsucker, Charles L., Hickory, N. C. Med. Coll., 1913	1913	1915
Klutz, A. F., Maiden, Jeff. Med. Coll., 1917	1917	1920
Klutz, P. J., Maiden	1885	1916
Long, Fred Y., Catawba, Balt. Med. Coll., N. C. Med. Coll.	1898	1898
Long, Glenn, Newton, N. C. Med. Coll., 1912	1912	1915
Menzies, H. C., Hickory, N. C. Med. Coll., 1894	1894	1899
Rowe, H. E., Hickory, N. C. Med. Coll., 1905	1905	1917
Rowe, R. H., Hickory, Univ. of Louisville, 1912	1912	1913
Shipp, George W., Newton, Hosp. Coll. of Med., Louisville, 1897	1911	1915
Shuford, J. H., Hickory, Univ. of Michigan, 1901	1902	1902
Speas, W. P., Hickory, Univ. Coll. of Med., Richmond, 1911	1911	1919
Stevenson, T. T., Hickory, Univ. of Ky., 1893	1893	1907

CHATHAM COUNTY SOCIETY

President, R. W. Palmer, Gulf, Louisville Med. Coll., 1890	1891	1891
Secretary, W. Clyde Thomas, Siler City, Med. Coll. of Va., 1917	1917	1920
Cathell, J. E., Moncure, Univ. of Md., 1899	1902	1906
Chapin, Wm. B., Pittsboro, Univ. of N. C., 1909	1909	1910
Denson, H. A., Bennett, Central Coll. of P. and S., Indianapolis, 1887	1913	1913
Edwards, J. D., Siler City, Louisville Med. Coll., 1887	----	1894
Upchurch, C. G., Moncure, Univ. of Md., 1906	1907	1922

CHEROKEE COUNTY SOCIETY

President, J. N. Hill, Murphy, Univ. of Louisville, 1909	1909	1909
Secretary, N. B. Adams, Murphy, Tenn. Med. Coll., 1896	1909	1909

Name and Address	*Licensed*	*Joined State Society*
Herbert, Fred L., Andrews, Lincoln Mem. Univ., 1904	1912	1912
Highway, S. C., Murphy, Medical Coll. of Ohio, 1885	1885	1898
Meroney, B. B., Murphy, Gate City Med. Coll., Texas, 1906	1908	1909
Morrow, Wm. C., Andrews, Atlanta School of Med., 1907	1909	1909
Orr, C. V., Andrews, Univ. of La., 1909	1909	1909
Tidwell, J. E., Andrews, Chattanooga Med. Coll., 1903	1913	1915
Webb, B. G., Andrews, Louisville Med. Coll., 1885	1885	1885
Young, G. M., Postell, Lincoln Mem. Univ., 1916	1917	1918

CHOWAN-PERQUIMANS COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Cason, H. M. S., Edenton, Univ. of Md., 1899	1899	1899
Cox, Thomas A., Hertford, Univ. of Md., 1892	1907	1918
Dillard, Richard, Jr., Edenton (Hon.), Jeff. Med. Coll., 1879	1880	1880
McMillan, J. D., Edenton (Hon.)	----	----
Mitchener, J. S., Raleigh, Johns Hopkins Univ., 1915	1917	1918
Smith, Robert W., Hertford, Univ. of Md., 1892	1892	1918
Ward, I. A., Belvidere, Univ. of N. C., 1907	1907	1915
Whichard, M. P., Edenton, Univ. of Md., 1910	1910	1918

CLEVELAND COUNTY SOCIETY

President, Ben Gold, Shelby, P. and S., Balt., 1921	1921	1922
Secretary, T. G. Hamrick, Shelby, P. and S., Balt., 1895	1904	1904
Aydlette, Joseph P., Earl, Kentucky Univ., 1901	1903	1903
Ellis, R. C., Shelby (Hon.), Balt. Univ. Med. School, 1886	----	1891
Gibbs, E. W., Shelby, Univ. of N. C., 1907	1907	1918
Gold, G. M., Shelby, R. 5, Charlotte Med. Col., 1911	1911	1914
Gold, T. B., Lawndale, N. C., Med. Coll., 1911	1911	1915
Grigg, W. T., Lawndale, Univ. of Virginia, 1896	1896	1901
Hamrick, J. Y., Jr., Boiling Springs, P. and S., N. Y., 1916	1916	1917
Houser, E. A., Shelby, Balt. Univ. School of Med., 1902	1902	1904
Lackey, F. H., Fallston, Univ. of Md., 1915	1915	1920
Lattimore, E. B., Shelby, Bellevue, 1897	1897	1904
Lee, Lawrence V., Lattimore, Atlanta School of Med., 1894	1897	1904
Mitchell, W. F., Shelby, Univ. of Md., 1890	1900	1904
Oates, George, Grover, Univ. of Louisville, 1892	1894	1904
Palmer, B. H., Shelby, Louisville Med. Coll., 1896	1898	1904
Royster, S. S., Shelby, Tenn. Med. Coll., 1890	1896	1904
Wood, J. W., Shelby, R. 3, Louisville Med. Coll., 1892	1893	1900

COLUMBUS COUNTY SOCIETY

President, T. V. Moore, Acme, Balt. Med. Coll., 1901	1901	1911
Secretary, Floyd Johnson, Whiteville, Memphis Hosp. Med. Coll., 1903	1903	1904
Baggett, Leaman, Tabor, N. C. Med. Coll., 1907	1907	1909
Blake, J. F., Chadbourn, N. C. Med. Coll., 1905	1905	1907
Brunson, E. P., Boardman, Jeff. Med. Coll., 1921	1922	1923

Name and Address	*Licensed*	*Joined State Society*
Cox, G. S., Tabor, N. C. Med. Coll., 1911	1911	1914
Crowell, W. H., Whiteville, Univ. of Md., 1895	1895	1908
Floyd, L. D., Cerro Gordo, N. C. Med. Coll., 1911	1911	1912
Formyduval, T., Bolton, Med. Col. of Va., 1919	1920	1922
Maxwell, H. B., Whiteville, Univ. of Md., 1902	1902	1902
Sadler, R. C., Whiteville, N. C. Med. Coll., 1912	1912	1915
Smith, W. F., Chadbourn, N. C. Med. Coll., 1904	1904	1905
Thomson, J. R., Lake Waccamaw, Univ. Coll. of Med., Richmond, 1899	1899	1915
Whitaker, R. B., Whiteville, Univ. Coll. of Med., Richmond, 1912	1912	1913

CRAVEN COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Caton, George A., New Bern, Med. Coll. of Va., 1898	1898	1904
Daniels, R. L., New Bern, Med. Coll. of Va., 1912	1912	1919
Duffy, Leinster, New Bern, P. and S., Balt., 1889	1888	1888
Duffy, R. N., New Bern, Johns Hopkins, 1906	1907	1908
Gibbs, N. M., New Bern, Univ. Md. and Coll. P. and S., Balt., 1896	1897	1897
Hughes, Francis W., New Bern (Hon.), Univ. of Penna., 1880	1885	1885
Jones, R. Duval, New Bern, Univ. of Md., 1896	1897	1897
Latham, Joseph R., New Bern, Jeff. Med. Coll., 1917	1917	1923
Milbee, R. O., Cove City, Univ. of Kentucky, 1911	1914	1922
Wadsworth, H. B., New Bern, Johns Hopkins, 1918	1918	1923

CUMBERLAND COUNTY SOCIETY

President, W. T. Rainey, Fayetteville, Univ. Coll. of Med., Richmond, 1913	1913	1916
Secretary, W. C. Verdery, Fayetteville, Univ. of Georgia, 1914	1914	1921
Allgood, R. A., Fayetteville, Univ. of Md. and Coll. of P. and S., Balt., 1912	1916	1917
Averitt, K. G., Cedar Creek, Balt. Med. Coll., 1893	1893	1902
Bullock, Thomas C., Autryville, P. and S., Balt., 1885	1885	1905
Cook, H. L., Fayetteville, Jeff. Med. Coll., 1918	1918	1920
Gainey, John W., Fayetteville, Univ. of Penna., 1917	1917	1921
Highsmith, J. D., Fayetteville, Jeff. Med. Coll., 1918	1918	1920
Highsmith, J. F., Fayetteville (Hon.), Jeff. Med. Coll., 1889	1889	1893
Highsmith, Seavy, Fayetteville, Univ. Coll. of Med., Richmond, 1901	1901	1902
Jordan, Wm. S., Fayetteville, Univ. of N. C., 1906	1906	1907
Larkin, E. W., Fayetteville, Univ. of N. C., 1917	1920	1922
Lilly, James M., Fayetteville, Univ. Coll. of Med., Richmond, 1903	1903	1904
McFadyen, O. L., Fayetteville, N. C. Med. Coll., 1912	1912	1912
McGougan, J. V., Fayetteville, Univ. Md. and Coll. P. and S., Balt., 1893	1893	1909
MacKethan, D. G., Fayetteville, Univ. Coll. of Med., Richmond, 1899	1899	1899
MacKethan, John A., Fayetteville, N. C. Med. Coll., 1901	1901	1903
McNeill, James Wm., Fayetteville (Hon.), Bellevue, 1876	1876	1876

Name and Address	*Licensed*	*Joined State Society*
Olive, P. W., Wade, P. and S., Balt., 1907	1907	1909
Pittman, R. L., Fayetteville, Univ. of Md., 1906	1910	1912
Vann, J. R., Jr., Fayetteville, Jeff. Med. Coll., 1917	1917	1920
West, T. M., Fayetteville, Univ. of Md., 1908	1910	1910

CURRITUCK COUNTY SOCIETY

President, J. M. Newbern, Jarvisburg, Georgetown Univ., 1898	1899	1900
Secretary, S. M. Mann, Moyock, P. and S., Balt., 1895	1895	1904
Cowell, Will H., Shawboro, Ky. School of Med., 1893	1909	1911
Griggs, W. T., Poplar Branch, Univ. of Va., 1896	1896	1901

DAVIDSON COUNTY SOCIETY

President, R. V. Yokeley, Thomasville, N. C. Med. Coll., 1911	1911	1912
Secretary, D. R. Perry, Lexington, Jeff. Med. Coll., 1919	1919	1922
Anderson, Abel, Denton	----	1904
Buchanan, E. J., Lexington, Univ. of Md., 1892	1892	1900
Clodfelter, C. M., Lexington, P. and S., Balt., 1905	1905	1907
Hill, David J., Lexington, P. and S., Balt., 1893	1893	1894
Hill, W. Lee, Lexington, R. 4, P. and S., Balt., 1893	1893	1904
Hobgood, J. E., Thomasville, Jeff. Med. Coll., 1907	1907	1917
Julian, Charles A., Thomasville (Hon.), Louisville Med. Coll., 1888	1891	1892
Mock, Frank L., Lexington, R. 3, N. C. Med. Coll., 1908	1908	1911
Phillips, C. H., Thomasville, Balt. Univ. Sch. of Med., 1892	1893	1911
Sharpe, C. R., Lexington, Jeff. Med. Coll., 1914	1914	1917
Smith, J. A., Lexington, N. C. Med. Coll., 1915	1915	1917
Terry, J. R., Lexington, Univ. of Louisville, 1911	1912	1912
Thompson, C. D., Lexington, Univ. of Tenn., 1901	1901	1904
Vestal, W. J., Lexington, P. and S., Balt., 1883	1885	1893
York, A. A., Southmont, Chattanooga Med. Coll., 1907	1907	1909
Zimmerman, Robert U., Lexington, R. 4, N. C. Med. Coll., 1901	1901	1904

DAVIE COUNTY SOCIETY

President, W. C. Martin, Mocksville, P. and S., Balt., 1888	1888	1904
Secretary, A. B. Byerly, Cooleemee, Univ. Coll. of Med., Richmond, 1896	1896	1904
Greene, G. V., Advance, R. 2, N. C. Med. Coll., 1916	1916	1923
Martin, Lester P., Mocksville, Jeff. Med. Coll., 1920	1920	1921
Nicholson, C. R., Harmony, N. C. Med. Coll., 1912	1912	1916
Rodwell, John W., Mocksville, P. and S., Balt., 1895	1895	1896

DUPLIN COUNTY SOCIETY

President, John W. Carroll, Wallace, Univ. of Md., 1903	1903	1903
Secretary, R. C. Williams, Wallace, Univ. of Md., 1912	1915	1916
Carr, R. L., Rose Hill, Balt. Med. Coll., 1907	1908	1909
Farrior, J. W., Warsaw, Univ. of Penna., 1912	1913	1917
Kennedy, George W., Beulaville, Univ. Coll. of Med., Richmond, 1898	1898	1909

Name and Address	*Licensed*	*Joined State Society*
Landen, J. F., Chinquapin, Univ. Coll. of Med., Richmond, 1905	1905	1907
Maxwell, J. F., Pink Hill	1886	1917
Morton, J. X., Faison, Univ. of N. C., 1915	1915	1922
Quinn, Robert F., Magnolia, N. C. Med. Coll., 1912	1913	1916
Reed, D. H., Mooresville, George Washington Univ., 1901	1904	1917
Robinson, J. D., Wallace, Univ. of Md., 1916	1915	1917
Williams, James M., Warsaw, Univ. of Md., 1902	1902	1902

DURHAM-ORANGE COUNTY SOCIETY

President, T. C. Kearns, Durham, Univ. of Pa., 1911	1911	1912
Secretary, H. M. Sweaney, Durham, Univ. of Pa., 1919	1919	1920
Abernethy, E. A., Durham, Med. Coll. of Va., 1901	1901	1914
Adams, C. A., Durham, P. and S., Balt., 1892	1892	1901
Adkins, M. T., Durham, Johns Hopkins, 1907	1915	1916
Darden, O. B., Richmond, Va., Med. Coll. of Va., 1918	1918	1920
Baynes, R. H., Durham, Univ. of Md., 1914	1914	1920
Bitting, Numa D., Durham, Jeff. Med. Coll., 1907	1907	1909
Boddie, Needham P., Durham (Hon.), P. and S., Balt., 1883	1883	1883
Booker, Lyle S., Durham, Univ. Coll. of Med., Va., 1908	1910	1911
Boone, W. H., Durham, N. C. Med. Coll., 1902	1902	1910
Bowling, Edwin H., Durham, P. and S., Balt., 1890	1890	1908
Brinkley, H. M., West Durham, Jeff. Med. Coll., 1919	1919	1923
Brooks, B. U., Durham, Univ. of Md., 1905	1905	1907
Bullitt, J. B., Chapel Hill, Univ. of Va., 1897	1914	1915
Coppridge, W. M., Durham, Jeff. Med. Coll., 1918	1919	1920
Fassett, Burton W., Durham, Balt. Med. Coll., 1898	1899	1909
Felts, Robert L., Durham, Univ. of Md., 1898	1901	1909
Graham, Joseph, Durham, Univ. of Pa., 1902	1902	1906
Hayes, R. B., Hillsboro, Univ. of Md., 1906	1910	1917
Hicks, Calvin S., Durham, Univ. of Md., 1904	1904	1904
Hicks, Wm. N., Durham (Hon.), Va. Med. Coll., 1864	1879	1879
Holloway, O. W., Durham, Va. Med. Coll., 1901	1901	1917
Holloway, Robt. Lee, West Durham, Va. Med. Coll., 1893	1893	1901
Johnson, Norman M., Durham (Hon.), P. and S., Balt., 1877	1879	1879
Lawson, R. B., Chapel Hill, Univ. of Md., 1902	1915	1920
Lloyd, B. B., Chapel Hill, Univ. of N. C., 1909	1909	1914
Lyon, E. H., Bahama, Univ. of Md., 1904	1904	1912
MacNider, Wm. DeB., Chapel Hill, Univ. of N. C., 1902	1902	1903
McPherson, S. D., Durham, Univ. of Md., 1903	1903	1912
Manning, I. H., Chapel Hill, Long Island, Long Island Col. Hosp., N. Y., 1897	1899	1901
Manning, John M., Durham (Hon.), Bellevue Med. Coll., 1882	1884	1882
Montague, S. J., Durham, Univ. of N. Y., 1872	1880	1922
Nichols, Rhodes E., Gorman, Va. Med. Coll., 1890	1890	1904
Pittman, H. L., West Durham, Univ. of Md., 1922	1922	1923
Roberson, Foy, Durham, Jeff. Med. Coll., 1909	1909	1912
Ross, Geo. H., Durham, Univ. of Tenn., 1899	1904	1904
Schuler, J. E., East Durham, Univ. of Va., 1914	1920	1922
Speed, J. A., Durham, Jeff. Med. Coll., 1914	1914	1916

Name and Address	*Licensed*	*Joined State Society*
Stanford, R. W., Durham, Univ. of Pa., 1919	1919	1923
Sterrett, J. R., Durham, Va. Univ. Coll. of Med., 1908	1913	1916
Sweaney, John, West Durham, P. and S., Balt., 1886	1888	1916
Watkins, G. T., Durham, Jeff. Med. Coll., 1915	1915	1917

EDGECOMBE COUNTY SOCIETY

President, A. M. Wooten, Pinetops, Univ. of N. C., 1910	1910	1911
Secretary,	----	----
Baker, J. M., Tarboro (Hon.), Univ. of Md., 1879	1879	1879
Barber, Y. M., Macclesfield, Univ. of Md., 1914	1917	1918
Bass, Spencer P., Tarboro, Univ. of Va., 1906	1907	1909
Green, Wm. W., Tarboro, Univ. of N. C., 1908	1908	1910
Harrell, Samuel N. Tarboro, Univ. of Md., 1897	1897	1904
Lane, M. E., Pinetops, Jeff. Med. Coll., 1921	1921	1922
Norfleet, L. E., Tarboro, Columbia Univ. Coll. of P. and S., 1888	1890	1920
Raby, J. G., Tarboro, Univ. Coll. of Med., Va., 1911	1911	1912
Royster, Thos. H., Tarboro, Univ. of Va., 1908	1908	1914
Speight, R. H., Sr., Whitakers (Hon.), Univ. of Md., 1870	1875	1875
Thigpen, Wm. J., Tarboro, Jeff. Med. Coll., 1900	1900	1901

FORSYTH COUNTY SOCIETY

President, O. P. Schaub, Winston-Salem, Balt. Med. Coll., 1898	1898	1898
Secretary, Leroy J. Butler, Winston-Salem, Med. Coll. of Va., 1920	1920	1921
Belton, J. F., Winston-Salem, Univ. of Pa., 1914	1914	1916
Benbow, J. T., Winston-Salem, N. C., Med. Coll., 1910	1910	1920
Bowers, M. A., Winston-Salem, Tulane Univ., 1911	1911	1914
Bynum, John, Winston-Salem (Hon.), Univ. of N. Y., 1892	1892	1893
Carlton, R. L., Winston-Salem, Univ. of Md., 1906	1906	1908
Cooke, G. C., Winston-Salem, Univ. of Md., 1918	1919	1920
Craig, S. D., Winston-Salem, Tulane Univ., 1908	1908	1912
Crawford, W. J., Winston-Salem, Med. Coll. of Va., 1922	1922	1923
Dalton, D. N., Winston-Salem (Hon.), Univ. of N. Y., 1881	1885	1885
Dalton, Wm. N., Winston-Salem, N. C. Med. Coll., 1904	1904	1905
Daugherty, J. E., Brooklyn, N. Y., Barnes Med. Coll., 1910	1910	1920
Davis, J. M., Winston-Salem, Columbia Univ., 1913	1913	1920
Davis, Thomas W., Winston-Salem, S. C. Med. Coll., 1898	1900	1900
Edwards, A. D., Winston-Salem, U. of Med., 1903	1904	1905
Fearrington, Jos. P., Winston-Salem, Univ. of Md., 1887	1887	1904
Flippin, Jas. M., Winston-Salem, P. and S., Balt., 1884	1884	1910
Flynt, S. S., Rural Hall, P. and S., Balt., 1889	1890	1907
Gray, Eugene P., Winston-Salem, Johns Hopkins, 1906	1907	1909
Grimes, W. L., Winston-Salem, Johns Hopkins, 1910	1910	1915
Hammock, J. C., Walkertown, P. and S., Balt., 1889	1890	1908
Hanes, F. M., Winston-Salem, Johns Hopkins, 1908	1908	1917
Hurdle, S. W., Winston-Salem, Jeff. Med. Coll., 1914	1915	1916
Izlar, H. L., Winston-Salem, N. C., Med. Coll., 1915	1916	1916
Jennings, R. G., Winston-Salem, N. C. Med. Coll., 1913	1913	1920
Johnson, Wingate M., Winston-Salem, Jeff. Med. Coll., 1908	1908	1911
Jones, Beverly N., Winston-Salem, Va. Med. Coll., 1915	1915	1921

Name and Address	*Licensed*	*Joined State Society*
Justice, Jas. T., Kernersville, N. C. Med. Coll., 1904	1904	1905
Kapp, Henry H., Winston-Salem, Jeff. Med. Coll., 1901	1901	1904
Keiger, O. R., Winston-Salem, Univ. of Va., 1911	1911	1914
Kerr, Jas. E., Winston-Salem, Univ. of Md., 1897	1898	1898
Lawrence, Chas. S., Winston-Salem, Geo. Wash. Univ., 1908	1908	1911
Linville, Aaron Y., Winston-Salem, Univ. of N. Y., 1889	1889	1896
Lockett, Everett A., Winston-Salem, Univ. of Pa., 1902	1903	1904
Long, Vann McKee, Winston-Salem, N. C. Med. Coll., 1906	1906	1911
Mimms, C. W., Winston-Salem, Vanderbilt Univ., 1914	1916	1917
Moore, R. A., Winston-Salem, N. C. Med. Coll., 1911	1911	1917
Munt, H. F., Winston-Salem, Va. Med. Coll., 1911	1914	1916
Paddison, Jno. R., Jr., Kernersville, Univ. of Md., 1902	1902	1913
Pepper, John Kerr, Winston-Salem, P. and S., Balt., 1907	1908	1908
Perkins, J. R., Winston-Salem, Med. Coll. of Va., 1904	1904	1917
Pfohl, Samuel F., Winston-Salem, Univ. of Pa., 1894	1898	1898
Redfern, T. C., Winston-Salem, L. I. Med. Coll. Hosp., 1916	1920	1921
Rousseau, J. P., Winston-Salem, Univ. of Md., 1918	1919	1920
Salmons, L. R., Winston-Salem, N. C., Med. Coll., 1912	1912	1916
Schallert, P. O., Winston-Salem, Univ. of Ill., 1904	1904	1912
Sisk, C. N., Winston-Salem, U. of Nashville, 1905	1922	1923
Slate, John S., Winston-Salem, Univ. Coll. of Med., Va., 1900	1900	1920
Spainhour, Ellis H., Winston-Salem, Balt. Med. Coll., 1898	1898	1898
Spencer, Wm. O., Winston-Salem, Jeff. Med. Coll., 1891	1891	1894
Sterling, W. C., Winston-Salem, Vanderbilt Univ., 1917	1917	1921
Strickland, Edward F., Bethania, Univ. of N. Y., 1887	1887	1893
Summers, Chas. L., Baltimore, Md., U. and P. and S., Md., 1887	1891	1896
Thompson, Edgar S., Winston-Salem, Univ. of N. Y., 1919	1919	1921
Valk, A. deT., Winston-Salem, Johns Hopkins, 1910	1907	1914
Whittington, J. B., Winston-Salem, N. C. Med. Coll., 1911	1911	1913
Wiggins, J. C., Winston-Salem, Univ. of Pa., 1910	1910	1911
Wyatt, Wortham, Winston-Salem, Univ. of Pa., 1913	1913	1916

FRANKLIN COUNTY SOCIETY

President, R. F. Yarborough, Louisburg, Columbia Univ., D. C., 1898	1899	1899
Secretary, Henry H. Johnson, Louisburg, P. and S., Balt., 1915	1918	1919
Beam, H. M., Wood, Columbia Univ., N. Y., 1918	1918	1919
Burt, S. P., Louisburg, Coll. of P. and S., Balt., 1896	1896	1904
Harris, John H., Franklinton, Bellevue Med. Coll., 1886	1886	1904
Henderson, R. B., Franklinton, Univ. of Md., 1887	1887	1904
Johnson, B. C., Bunn, Univ. of N. C., 1909	1910	1910
Malone, James E., Louisburg, Bellevue Med. Coll., 1875	1885	1904
Newell, J. O., Louisburg, P. and S., Balt., 1912	1910	1912
Perry, H. G., Louisburg, P. and S., Balt., 1915	1915	1916
Timberlake, C. V., Youngsville, Univ. of Pa., 1915	1915	1922
Timberlake, Richard E., Youngsville, Jeff. Med. Coll., 1908	1908	1910

GASTON COUNTY SOCIETY

President, W. B. Hunter, Gastonia, Univ. of Pa., 1911	1911	1920

Name and Address	*Licensed*	*Joined State Society*
Secretary, Chas. O. DeLaney, Gastonia, Jeff. Med. Coll., 1919	1919	1922
Adams, Chas. E., Gastonia, Univ. of Md., 1878	1885	1904
Anders, McG., Gastonia, Med. Coll. of Va., 1901	1902	1902
Anderson, James A., Gastonia, Univ. of Ga., 1899	1909	1909
Anthony, J. E., Kings Mountain, Univ. of Tenn., 1911	1911	1911
Blair, J. L., Gastonia, Emory Univ., 1915	1920	1921
Boyles, M. F., Dallas, N. C. Med. Coll., 1917	1917	1920
Campbell, J. W., Gastonia, P. and S., Balt., 1893	1919	1920
Clinton, Roland S., Gastonia, Univ. of Md., 1914	1914	1920
Dimmett, J. A., Gastonia, Univ. of Ky., 1904	1906	1922
Eddleman, Hall M., Gastonia, Ky. School of Med., 1886	1886	1904
Garrison, D. A., Gastonia, Louisville Med. Coll., 1896	1896	1900
Glenn, Henry F., Gastonia, P. and S., Atlanta, 1900	1900	1904
Glenn, Lucius N., Gastonia, Univ. of Md., 1897	1897	1904
Hood, J. Sidney, Kings Mountain, Jeff. Med. Coll., 1907	1907	1910
Jenkins, John H., Gastonia, Ky. School of Med., 1887	1888	1904
Johnson, R. Lee, Gastonia, Jeff. Med. Coll., 1911	1911	1918
Lyday, C. E., Gastonia, Atlanta Sch. of Med., 1910	1910	1920
McAdams, C. R., Belmont, N. C. Med. Coll., 1912	1912	1916
McCombs, C. J., Gastonia, N. C. Med. Coll., 1905	1905	1908
McCoy, Thos. M., Mount Holly, N. C. Med. Coll., 1905	1906	1910
McLean, Chas. E., Gastonia, N. C. Med. Coll., 1903	1903	1905
Miller, Oscar L., Gastonia, Emory Univ., 1912	1921	1922
Miller, R. C., Cramerton, N. C. Med. Coll., 1909	1918	1919
Moore, B. D., Mount Holly, Va. Med. Coll., 1915	1915	1921
Norman, J. S., Kings Mountain, Univ. of Md., 1915	1915	1923
Patrick, Geo. R., Jr., Bessemer City, Univ. of Md., 1916	1916	1920
Patrick, L. N., Gastonia, Univ. of Md., 1910	1910	1913
Pressley, J. M., Belmont, N. C. Med. Coll., 1915	1915	1920
Pugh, Charles H., Gastonia, N. C. Med. Coll., 1910	1910	1913
Quickel, Thomas C., Gastonia, Tulane Univ., 1900	1899	1904
Reid, James W., Lowell, Jeff. Med. Coll., 1909	1909	1910
Rhyne, Robert E., Gastonia, N. C. Med. Coll., 1907	1907	1908
Robinson, Frank, Lowell, N. C. Med. Coll., 1878	1878	1904
Rudisell, J. D., Cherryville, Univ. of Md., 1922	1922	1923
Saunders, F. A., Cramerton, Emory Univ., 1915	1923	1923
Sloan, James M., Gastonia, Louisville Med. Coll., 1891	1891	1904
Taylor, B. C., Mount Holly, N. C. Med. Coll., 1910	1911	1923
Wilkins, Samuel A., Dallas, Univ. of Ky., 1902	1903	1903

GATES COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Blanchard, T. W., Hobbsville, Med. Coll. of Va., 1911	1911	1919

GRANVILLE COUNTY SOCIETY

President, Jos. A. Morris, Oxford, R. F. D., Vanderbilt Univ., 1890	1893	1899
Secretary, W. B. Bullock, Oxford, Bellevue Med. Coll., 1892	1892	1893

Name and Address	*Licensed*	*Joined State Society*
Bullock, J. H., Oxford, Univ. of Va., 1915	1915	1922
Cannady, Sam H., Oxford, Univ. of Va., 1887	1895	1904
Daniel, N. C., Oxford, N. C. Med. Coll., 1895	1895	1902
Hardee, Parrott R., Stem., P. and S., Balt., 1885	1885	1906
Hays, B. K., Oxford, Univ. Coll. of Med., Va., 1894	1894	1897
Meadows, Elijah B., Oxford, R. F. D., Univ. Coll. of Med., Va., 1901	1901	1901
Sikes, G. T., Creedmore (Hon.) Univ. of Md., 1883	1884	1884
Thomas, Wm. N., Oxford, Med. Coll. of Va., 1911	1911	1914
Thompson, Joseph, Creedmore, Univ. of Ky., 1904	1908	1912
Watkins, Geo. S., Oxford, Univ. Coll. of Med., Va., 1900	1900	1908

GREENE COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Dawson, W. E., Hookerton, Jeff. Med. Coll., 1920	1920	1922
Edwards, G. C., Hookerton (Hon.), Bellevue Med. Coll., 1883	1883	1883
Harper, J. H., Snow Hill, Jeff. Med. Coll., 1905	1906	1907
Murphy, W. B., Snow Hill, Univ. Coll. of Med., Va., 1903	1903	1905
Whittington, Wm. W., Snow Hill, Louisville Med. Coll., 1895	1895	1902

GUILFORD COUNTY SOCIETY

President, W. M. Jones, Jr., Greensboro, Univ. of Md., 1903	1903	1903
Secretary, D. W. Holt, Revolution Station, Greensboro, Jeff. Med. Coll., 1918	1918	1920
Ashworth, W. C., Greensboro, P. and S., Balt., 1892	1892	1904
Austin, J. W., High Point, Jeff. Med. Coll., 1910	1910	1913
Aydlette, H. T., Greensboro, Univ. of Va., 1894	1895	1907
Banner, Chas. W., Greensboro, Univ. of Md., 1899	1899	1901
Battle, John T. J., Greensboro (Hon.), P. and S., Balt., 1884	1884	1890
Beall, Wm. P., Greensboro (Hon.), Jeff. Med. Coll., 1879	1879	1879
Berry, John, Greensboro, Jeff. Med. Coll., 1908	1908	1920
Best, Benj. W., Greensboro, P. and S., Balt., 1884	1884	1920
Bonner, A. C., Greensboro, Jeff. Med. Coll., 1920	1920	1922
Bonner, O. B., High Point, Univ. of Md., 1917	1917	1921
Bowman, H. P., Greensboro, Univ. of Tenn., 1894	1894	1905
Boyles, J. H., Greensboro, P. and S., Balt., 1903	1903	1904
Braddy, Wade H., Greensboro, Univ. of N. C., 1909	1909	1913
Brockman, Harry L., Greensboro, Univ. of Pa., 1917	1917	1921
Burrus, John T., High Point, Univ. of N. C., 1898	1898	1898
Coe, Samuel S., High Point, Univ. Coll. of Med., Va., 1911	1912	1913
Cole, Walter F., Greensboro, Johns Hopkins, 1909	1909	1910
Davis, W. C., Summerfield, Univ. of Md., 1896	1899	1904
Dees, Ralph E., Greensboro, Univ. of Md., 1906	1908	1909
Dees, Rigdon O., Greensboro, Univ. of Md., 1906	1906	1908
Dick, Julius V., Gibsonville, Univ. of N. C., 1907	1907	1908
Dodson, H. H., Greensboro (Hon.), Med. Coll. of Va., 1882	1885	1887

Name and Address	*Licensed*	*Joined State Society*
Fields, B. T., Greensboro, Univ. of Va., 1912	1912	1922
Flagge, Phillip W., Jamestown, Wash. Univ., St. Louis, 1902	1919	1919
Fortune, Alex. F., Greensboro, Univ. Coll. of Med., Va., 1900	1900	1904
Fox, M. F., Guilford College (Hon.), P. and S., Balt., 1881	1885	1885
Gilmer, Chas. S., Greensboro, Rt. 6, Univ. of N. Y., 1891	1891	1894
Glascock, J. H., Greensboro, Woman's Med. Coll., Md., 1896	1896	1907
Gove, Anna M., Greensboro, Woman's Med. Coll., N. Y., 1892	1894	1896
Graham, J. A., Kansas City, Mo., Chicago Med. and Surg., 1915	1918	1923
Grayson, C. S., High Point, Geo. Wash. Univ., 1906	1907	1908
Harrison, Edmund, Greensboro, Univ. of Md., 1896	1900	1900
Harvey, W. W., Greensboro, Emory Univ., 1920	1920	1923
Hiatt, H. B., High Point, Univ. of Md., 1907	1907	1910
Holt, Wm. T., McLeansville, Univ. of Tenn., 1890	1890	1896
Hyatt, Fred C., Greensboro, Jeff. Med. Coll., 1907	1907	1912
Jackson, Walter Leo., High Point, N. C. Med. Coll., 1912	1912	1913
Jarboe, Parron, Greensboro, Georgetown Univ., 1905	1906	1907
Jones, Arthur O., Greensboro, Bellevue, N. Y., 1890	1890	1904
Keiger, Jas. A., Greensboro, Univ. of Va., 1916	1916	1919
Knight, Wm. P., Greensboro, Balt. Med. Coll., 1898	1898	1898
Locke, Eva M., Greensboro, Univ. of Mich., 1900	1921	1922
Long, John W., Greensboro (Hon.), Vanderbilt Univ., 1884	1884	1884
Lyon, B. R., Greensboro, Columbia Univ., N. Y., 1915	1915	1920
McAnally, Wm. J., High Point, Balt. Med. Coll., 1897	1897	1899
McCain, Wm. R., High Point, Univ. of Md., 1897	1898	1898
McManus, W. L., Greensboro, Atlanta Sch. of Med., 1906	1912	1913
Mann, I. Thurman, High Point, Jeff. Med. Coll., 1912	1912	1915
Meadows, W. J., Greensboro, Med. Coll. of Alabama, 1894	1889	1904
Michaux, Edward R., Greensboro, Univ. of N .Y., 1889	1889	1904
Miles, May S., Greensboro, Women's Coll., Cinn., O., 1898	1904	1905
Moore, Chas. E., Greensboro, Jeff. Med. Coll., 1907	1909	1910
Moore, W. B., Brown Summit, P. and S., Balt., 1893	1893	1904
Moseley, Chas. W., Greensboro, Balt. Med. Coll., 1893	1893	1896
Norman, Geo. W., Pomona, Balt. Med. Coll., 1896	1896	1904
Ogburn, H. H., Greensboro, Johns Hopkins, 1913	1913	1914
Pate, F. J., Greensboro, U. of Md., and P. and S., Balt., 1908	1908	1915
Reaves, W. P., Greensboro, Univ. of the South, 1903	1905	1907
Reitzel, Claude E., High Point, P. and S., Atlanta, 1902	1902	1902
Roberson, Charles, Greensboro, L. I. Coll. Hosp., 1897	1897	1901
Roberson, Geo. B., Greensboro, Med. Coll. of S. C., 1915	1915	1917
Schoonover, R. A., Greensboro, Univ. of Md., 1905	1906	1912
Sharpe, F. A., Greensboro, Univ. of Pa., 1916	1916	1920
Shreve, J. R., Brown Summit, N. C. Med. Coll., 1915	1915	1920
Shugart, F. C., High Point, Columbia Univ. P. and S., 1915	1915	1920
Simmonds, L. L., Greensboro, Univ. of Tenn., 1893	1919	1919
Smith, Alick T., Greensboro, Med. Coll. of Va., 1908	1910	1913
Smith, Owen, High Point, Jeff. Med. Coll., 1904	1905	1917
Stanton, D. A., High Point (Hon.), Vanderbilt Univ., 1887	1887	1891
Stanton, T. M., High Point, Richmond Med. Coll., 1916	1916	1917
Starr, H. F., Greensboro, Jeff. Med. Coll., 1916	1916	1917

Name and Address	*Licensed*	*Joined State Society*
Tankersley, J. W., Greensboro, Jeff. Med. Coll., 1906	1906	1907
Taylor, F. R., High Point, Univ. of Pa., 1913	1913	1915
Thomas, J. G., Greensboro, Med. Coll. of Va., 1915	1915	1920
Turner, J. P., Greensboro, Univ. of Md., 1896	1897	1904
Van Winkle, C. C., Greensboro, Johns Hopkins, 1919	----	1923
Walker, J. B., Gibsonville, Med. Coll. of Va., 1914	1914	1916
Whitaker, A. C., Julian, Univ. of Tenn., 1903	1903	1908
Williams, B. B., Greensboro, Univ. of Md., 1886	1886	1893
Williams, John A., Greensboro, Univ. of Va., 1898	1898	1898
Williams, John D., Guilford Station, Vanderbilt Univ., 1898	1898	1898
Wilson, Albert R., Greensboro (Hon.), Jeff. Med. Coll., 1882	1882	1882
Wolfe, H. C., Greensboro, Med. Coll. of Va., 1917	1917	1920
Wolff, D. R., Greensboro, Jeff. Med. Coll., 1918	1918	1920
Woodruff, Fred G., High Point, Med. Coll. of Va., 1917	1919	1919

HALIFAX COUNTY SOCIETY

President, H. B. Furgerson, Halifax, Jeff. Med. Coll., 1882	1882	1904
Secretary, P. C. Carter, Weldon, Univ. of Md., 1916	1916	1920
Beckwith, R. P., Rosemary, Univ. of Pa., 1911	1913	1916
Flemming, W. L., Enfield, Univ. of N. C., 1910	1910	1916
Jarman, F. G., Roanoke Rapids, Univ. Coll. of Med., Va., 1911	1914	1916
Lassiter, H. G., Weldon, Jeff. Med. Coll., 1918	1918	1920
Leggett, Kenelm, Hobgood (Hon.), Ky. Sch. of Med., 1884	1885	1885
Leggett, V. W., Hobgood, Univ. of Louisville, 1913	1916	1920
Long, T. W. M., Roanoke Rapids, Univ. Coll. of Med., Va., 1908	1909	1900
Martin, J. W., Roanoke Rapids, Med. Coll. of Va., 1916	1917	1920
Palmer, Horace, Hollister, Atlanta Sch. of Med., 1912	1912	1920
Patchin, D. F., Rosemary, Univ. of N. Y. and Bellevue, 1913	1916	1917
Picot, L. J., Littleton (Hon.), Jeff. Med. Coll., 1875	1875	1875
Pierce, S. B., Weldon, Bellevue Hospital, 1897	1897	1906
Smith, O. F., Scotland Neck, Univ. Coll. of Med., Va., 1899	1899	1904
Suiter, W. G., Weldon, Med. Coll. of Va., 1917	1917	1920
Thigpen, H. G., Scotland Neck, Jeff. Med. Coll., 1917	1917	1920
Zollicoffer, D. B., Weldon, P. and S., Balt., 1881	1881	1904

HARNETT COUNTY SOCIETY

President, Jos. F. McKay, Buies Creek, S. C. Med. Coll., 1884	1885	1904
Secretary, H. C. Turlington, Dunn, Univ. Coll. of Med., Va., 1913	1913	1914
Barefoot, M. L., Dunn, Rt. 6, Univ. of Md., 1911	1911	1912
Buie, Roderick M., Duke, Jeff. Med. Coll., 1914	1914	1916
Coltrane, Wallace E., Dunn, Med. Coll. of Va., 1912	1913	1917
Halford, Jos. W., Lillington, Columbia Univ., 1904	1905	1905
Hicks, Isham F., Dunn, N. C., Med. Coll., 1902	1902	1904
Highsmith, Charles, Dunn, Balt. Med. Coll., 1898	1898	1898
Holt, Wm. P., Duke, Jeff. Med. Coll., 1895	1895	1901
McLean, John W., Godwin, N. C. Med. Coll., 1902	1902	1906
Melvin, Wayman C., Linden, Univ. Coll. of Med., Va., 1900	1900	1905

Name and Address	*Licensed*	*Joined State Society*
Phillips, J. W., Lillington, Jeff. Med. Coll., 1921	1922	1923
Roberts, H. C., Coats, Tulane Univ., 1912	1912	1913
Sexton, C. Hector, Dunn, Univ. of Md., 1890	1890	1904
Warren, R. L., Dunn, Tulane Univ., 1911	1911	1912

HAYWOOD COUNTY SOCIETY

President, T. F. Reynolds, Canton, N. C. Med. Coll., 1904	1904	1920
Secretary, J. R. McCracken, Waynesville, N. C. Med. Coll., 1902	1902	1903
Abel, J. F., Waynesville, Univ. of Md., 1892	1893	1899
Allen, Rufus L., Waynesville, Univ. of Md., 1885	1885	1889
Davis, F. M., Canton, Univ. of Tenn., 1894	1894	1904
Johnson, W. C., Canton, Tulane Univ., 1912	1912	1917
Montgomery, K. E., Waynesville, Univ. of Ky., 1917	1920	1920
Russell, Jesse M., Canton, Univ. of Nashville, 1911	1911	1912
Stringfellow, Jas. L., Sunburst, Univ. of Va., 1915	1921	1922
Stringfield, Samuel L., Sunburst, Jeff. Med. Coll., 1905	1905	1907
Stringfield, Thomas, Waynesville, Vanderbilt Univ., 1898	1898	1899
Way, J. Howell, Waynesville (Hon.), Vanderbilt Univ., 1886	1885	1887
Wilson, J. E., Canton, R. F. D., Louisville Med. Coll., 1876	1885	1903

HENDERSON-POLK COUNTY SOCIETY

President, B. F. Cliff, Hendersonville, Geo. Wash. Univ., 1908	1914	1915
Secretary, R. C. Sample, Hendersonville, Univ. of Pa., 1915	1915	1919
Brown, J. S., Hendersonville, Northwestern Univ., 1893	1894	1895
Dixon, Guy E., Hendersonville, P. and S., St. Louis, 1903	1903	1903
Drafts, Andrew B., Hendersonville, Univ. of Va., 1896	1899	1903
Edgerton, Jas. L., Hendersonville (Hon.), Univ. of Md., 1877	1885	1890
Grady, Wm. Earl, Tryon, Univ. and P. and S., Md., 1894	1895	1899
Howe, Wm. B. White, Jr., Hendersonville, Med. Coll. of S. C., 1906	1907	1908
Greenwood, S. E., Fletcher, Tenn. Med. Coll., 1902	1903	1904
Kirk, W. R., Hendersonville, Univ. of Ky., 1890	1901	1903
Mallett, E. P., Hendersonville, L. I. Coll. Hosp., 1889	1914	1914
Salley, E. McQueen, Saluda, Univ. of Md., 1905	1905	1908
Sumner, Thos. W., Fletcher, Jeff. Med. Coll., 1910	1910	1911

HERTFORD COUNTY SOCIETY

President, R. H. Gary, Murfreesboro, P. and S., Balt., 1881	1885	1904
Secretary, W. B. Pollard, Winton, Univ. of Pa., 1899	1903	1905
Burbage, Thos. I., Como, Memphis Med. Coll., 1883	1885	1890
Futrell, L. M., Murfreesboro, Va. Med. Coll., 1914	1914	1918
Greene, Arthur W., Ahoskie, Univ. Coll. of Med., Va., 1904	1904	1905
Harrell, Geo. N., Murfreesboro, Va. Coll. of Med., 1907	1907	1909
Mitchell, Jesse H., Ahoskie, Univ. of Balt., 1879	1885	1904
Mitchell, Paul H., Ahoskie, Va. Coll. of Med., 1907	1907	1908
Powell, Jesse A., Harrellsville, P. and S., Balt., 1907	1908	1909
Walker, L. K., Ahoskie, Univ. of Md., 1911	1911	1917

HOKE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, R. B. Wilkins, Raeford, N. C. Med. Coll., 1913	1913	1915
Secretary, L. B. McBrayer, Sanatorium, Univ. Louisville, 1891	1891	1899
Brown, G. W., Raeford, Ky. Sch. of Med., 1898	1900	1900
Geddie, K. B., Raeford, Jeff. Med. Coll., 1921	1921	1923
Graham, Geo. A., Raeford, Univ. of N. Y., 1876	1885	1904
McBrayer, R., Sanatorium, Univ. of Pa., 1916	1916	1917
McCain, P. P., Sanatorium, Univ. of Md. and P. and S., Balt., 1911	1914	1917
Williams, Jabez H., Sanatorium, Jefferson Med. Coll., 1920	1920	1922

HYDE COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Harris, Arthur G., Fairfield, Univ. of the South, 1905	1907	1908

IREDELL-ALEXANDER COUNTY SOCIETY

President, C. L. Sherrill, Statesville, N. C. Med. Coll., 1914	1914	1915
Secretary, J. E. McLaughlin, Statesville, Univ. of Md., 1886	1886	1900
Adams, M. R., Statesville (Hon.), Univ. of Md., 1878	1884	1884
Anderson, Thos. E., Statesville (Hon.), Jeff. Med. Coll., 1878	1878	1879
Bell., A. E., Mooresville, Univ. and P. and S., Md., 1897	1897	1904
Bennett, W. H., Savannah, Ga., Loyola Univ., 1918	1920	1922
Brandon, Wm. R., Statesville, Univ. of Md., 1914	1914	1916
Davis, Jas. W., Statesville, Univ. of Pa., 1913	1913	1915
Easley, P. S., Statesville, N. C. Med. Coll., 1907, Jeff., 1908	1907	1913
Gibson, L. O., Statesville, Char. Med. Coll., 1913	1913	1915
Gilmore, W. D., Cincinnati, O., Univ. of N. C., 1903	1903	1904
Goode, T. V., Jr., Statesville, Univ. Coll. of Med., Va., 1912	1912	1916
Jurney, Peter C., Turnersburg, Va. Med. Coll., 1901	1901	1904
Long, H. F., Statesville (Hon.), Univ. of Md., 1892	1892	1893
McElwee, Ross S., Statesville, Univ. of Md., 1909	1909	1910
Tally, J. S., Troutman, Univ. of N. C., 1909	1910	1917
Tatum, Roy C., Statesville, Univ. of Pa., 1919	1919	1920
Taylor, G. W., Mooresville, N. C. Med. Coll., 1906	1906	1917
Thurston, Asa, Taylorsville, P. and S., Balt., 1909	1909	1914

JACKSON COUNTY SOCIETY

President, C. Z. Candler, Sylva, P. and S., Atlanta, 1901	1901	1904
Secretary, D. D. Hooper, Sylva, Univ. Coll. of Med., Va., 1905	1905	1905
Bryson, E. J., Cullowhee, Bennett, Chicago, Ill., 1913	1914	1915
Nichols, Alvon A., Sylva., Univ. of Nashville, 1898	1904	1904
Nichols, Asbury S., Sylva, Lincoln Memo. Univ., 1905	1907	1913
Wilkes, Grover C., Sylva, N. C. Med. Coll., 1916	1916	1920

JOHNSTON COUNTY SOCIETY

President, Battle A. Hocutt, Clayton, Univ. of N. C., 1906	1906	1908
Secretary, J. H. Fitzgerald, Smithfield, Jeff. Med. Col., 1920	1920	1922
Brooks, H. E. Clayton, Med. Coll. of Va., 1920	1922	1923

Name and Address	*Licensed*	*Joined State Society*
Coleman, G. S., Kenly, Va. Med. Coll., 1907	1907	1909
Grady, Jas. C., Kenly, P. and S., Balt., 1887	1887	1890
Griffin, J. A., Clayton (Hon.), P. and S., Balt., 1881	----	1890
Hinnant, Milford, Micro, Jeff. Med. Coll., 1912	1912	1913
Hooks, Thel., Smithfield, Med. Coll. of Va., 1901	1901	1903
Lee, S. J. P., Benson., Maryland Med. Coll., 1904	1904	1922
McLemore, Geo. A., Clayton, R. F. D., Univ. of N. C., 1906	1906	1908
Martin, J. F., Benson, N. C. Med. Coll., 1905	1905	1918
Mayerberg, I. W., Selma, Univ. of Pa., 1907	1907	1909
Noble, R. J., Selma (Hon.), Ky. Med. School, 1875	1878	1878
Oliver, A. S., Benson, Jeff. Med. Coll., 1914	1914	1919
Parker, G. E., Benson, P. and S., Balt., 1886	1888	1904
Person, J. B., Selma, Med. Coll. of Va., 1897	1897	1900
Rose, A. H., Smithfield, Jeff. Med. Coll., 1906	1906	1907
Stanley, John H., Four Oaks, Univ.. of N. C., 1904	1904	1906
Stevens, R. S., Princeton, Univ. of N. C., 1901	1905	1907
Surles, J. B., Four Oaks, Jeff. Med. Coll., 1902	1909	1919
Tyner, Carl V., Smithfield, Univ. and Bellevue Hosp., N. Y., 1916	1916	1919
Vick, Geo. D., Selma, Jeff. Med. Coll., 1906	1906	1907
Wharton, L. D., Smithfield, Tulane Univ., 1893	1893	1894
Woodard, G. B., Kenly, Med. Coll. of Va., 1915	1915	1916
Young, J. J., Clayton, P. and S., Balt., 1897	1896	1904

JONES COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Bell, J. C., Maysville, Univ. of Va., 1910	1915	1922
Page, B. W., Maysville, Tulane Univ., 1909	1909	1919

LEE COUNTY SOCIETY

President, J. F. Foster, Sanford, N. C. Med. Coll., 1916	1916	1919
Secretary, Lynn McIver, Sanford, Univ. of N. C., 1901	1902	1902
Lutterloh, I. H., Sanford, Univ. of Tenn., 1890	----	1922
McIver, E. M., Jonesboro, Univ. of N. C., 1908	1908	1911
Matthews, M. L., Sanford, Univ. of N. C., 1903	1903	1904
Monroe, J. P., Sanford, P. and S., Balt., 1901	1901	1905
Monroe, W. A., Sanford (Hon.), Univ. of Md., 1886	1886	1890
Scott, Charles L., Sanford, Univ. of Md., 1897	1899	1916
Snipes, E. P., Jonesboro (Hon.), Vanderbilt Univ., 1890	1890	1890
Watson, Leon, Broadway, N. C. Med. Coll., 1900	1900	1904

LENOIR COUNTY SOCIETY

President,	----	----
Secretary, Floyd P. Wooten, Kinston, Jeff. Med. Coll., 1920	1920	1923
Adams, L. C., LaGrange, N. C. Med. Coll., 1903	1903	1921
Hardy, Ira M., Kinston, Med. Coll. of Va., 1901	1902	1902
Hargrove, W. F., Kinston, Univ. of Md., 1900	1900	1900
McNairy, C. Banks, Kinston, P. and S., Balt., 1893	1893	1905
Mangum, C. P., Kinston, Jeff. Med. Coll., 1918	1918	1920

Name and Address	*Licensed*	*Joined State Society*
Moseley, Z. V., Kinston, Va. Univ. Coll. of Med., 1913	1913	1914
Parrott, A. DeK., Kinston, Univ. Coll. of Med., Va., 1906	1906	1908
Parrott, Jas. M., Kinston, Tulane Univ., 1895	1895	1896
Parrott, M. C., Kinston, Tulane Univ., 1917	1917	1919
Parrott, Wm. T., Kinston, Tulane Univ., 1895	1895	1901
Tull, Henry, Kinston (Hon.), Univ. of Pa., 1876	1876	1876
West, C. F., Kinston, Univ. of Pa., 1917	1917	1920
Weyher, V. E., Kinston, Vienna, Austria, 1869	----	1919
Whitaker, F. S., Kinston, Balt. Med. Coll., 1913	1913	1914
Whitaker, R. A., Kineston (Hon.), P. & S., Balto., 1885	1885	1885
Woodley, C. B., Kinston, Univ. of N. Y., 1886	1886	1890

LINCOLN COUNTY SOCIETY

President, J. F. Gamble, Lincolnton, Univ. of Tenn., 1903	1915	1919
Secretary, G. B. Crowell, Lincolnton	----	1923
Abernathy, H. N., Denver, Louisville Med. Coll., 1894	1894	1899
Bradford, B. M., Lincolnton, N. C. Med. Coll., 1913	1913	1923
Crowell, L. A., Lincolnton, Balt. Med. Coll., 1892	1892	1898
Edwards, F. D., Belwood, Atlanta Med. Coll., 1914	1916	1919
Elliott, W. F., Lincolnton, Medico-Chir. Coll., Pa., 1916	1916	1917
Gamble, J. R., Lincolnton, Univ. of Tenn., 1911	1911	1912
Hoover, C. H., Denver, Balt. Med. Coll., 1903	1903	1903
Jacocks, W. P., Columbia, Ceylon, Univ. of Pa., 1911	1911	1913
Killian, R. B., Lincolnton, Louisville Med. Coll., 1885	1885	1904
Lee, R. E., Lincolnton, Univ. of Md., 1896	1896	1918
Saine, J. W., Lincolnton, Louisville Med. Coll., 1891	1891	1904
Shellum, O. W., Lowesville, N. C. Med. Coll., 1909	1909	1913

McDOWELL COUNTY SOCIETY

President,	----	----
Secretary, Jno. B. Johnson, Old Fort, Univ. of Ky., 1905	1914	1914
Ashworth, B. L., Marion, P. and S., Balt., 1893	1893	1900
Butt, R. B., Marion, Emory Univ., Atlanta, 1920	1920	1921
Jonas, John F., Marion, P. and S., Balt., 1893	1903	1903
Kirby, Guy S., Marion, Univ. Coll. of Med., Va., 1897	1896	1903
McIntosh, D. M., Old Fort, Med Coll. of Va., 1904	1907	1909

MACON-CLAY COUNTY SOCIETY

President, S. H. Lyle, Franklin, Univ. of Nashville, 1883	1881	1882
Secretary, W. A. Rogers, Franklin, Univ. of Tenn., 1898	1898	1898
Fouts, J. H., Franklin, Vanderbilt Univ., 1895	1895	1918
Horsley, H. T., Franklin, Balt. Med. Coll., 1907	1915	1918
Killian, P. B., Hayesville, Atlanta P. and S., 1900	1909	1909
Lapham, Mary E., Highlands, Pa. Women's Med. Coll., 1900	1906	1906
Siler, Fred L., Franklin, Univ. of Nashville, 1897	1898	1903

MADISON COUNTY SOCIETY

President, W. F. Robinson, Mars Hill, Vanderbilt Univ., 1896	1903	1904
Secretary, Frank Roberts, Marshall, Jeff. Med. Coll., 1892	1892	1902

Name and Address	Licensed	Joined State Society
Andrews, John H., White Rock, Harvard Med. Coll., 1902	1902	1923
Baird, John W., Mars Hill, Lincoln Memo. Univ., 1901	1908	1909
Burnett, Isaac E., Mars Hill, Lincoln Memo. Univ., 1901	1905	1904
English, I. L., Faust	1887	1904
Moore, Jos. N., Marshall, Univ. of N. C., 1905	1905	1909
Packard, G. H., White Rock, P. and S., Balt., 1898	1915	1915
Peck, Edward J., Hot Springs, Vanderbilt Univ., 1879, Univ. of Tenn., 1880	----	1903
Sams, W. A., Marshall, Lincoln Memo. Univ., 1911	1920	1920
Tilson, Jacob C., Marshall, Lincoln Memo. Univ., 1885	1885	1904

MARTIN COUNTY SOCIETY

President, B. L. Long, Hamilton (Hon.), Univ. of Md., 1881	1883	1885
Secretary, Wm. E. Warren, Williamston, Nongrad. Univ. N. Y.	1893	1894
Hargrove, R. H., Robersonville (Hon.), Univ. of Md., 1877	1879	1879
Knight, J. B. H., Williamston (Hon.), P. and S., Balt., 1885	1885	1890
Long, Edgar M., Hamilton, Univ. of Md., 1909	1909	1910
Nelson, Robt. J., Robersonville (Hon.), Louisville Med. Coll., 1890	1890	1893
Pittman, E. E., Oak City, Va. Med. Coll., 1919	1919	1920
Rhodes, Jas. S., Williamston, Va. Med. Coll., 1906	1906	1907
Saunders, Jos. H., Williamston, Univ. Coll. of Med., Va., 1905	1905	1909
Smithwick, Jas. E., Jamesville, Med. Coll. of Va., 1897	1897	1904
Ward, Jesse E., Robersonville, Univ. of Md., 1904	1904	1905
Ward, Vernon A., Robersonville, Jeff. Med. Coll., 1908	1908	1914
York, Hugh B., Williamston, P. and S., Balt., 1906	1906	1907

MECKLENBURG COUNTY SOCIETY

President, J. C. Montgomery, Charlotte, Univ. of N. Y., 1891	1891	1895
Secretary, J. P. Kennedy, Charlotte, Jeff. Med. Coll., 1915	1915	1920
Alexander, Annie L., Charlotte (Hon.), Women's Med. Coll. of Pa., 1884	1885	1885
Alexander, James R., Charlotte, Univ. of Md., 1894	1894	1899
Alexander, M. Janet, Montgomery, India, Women's Med. Coll. of Pa., 1917	1917	1918
Allan, William, Charlotte, P. and S., Balt., 1906	1906	1914
Ashe, J. R., Charlotte, Columbia Univ., 1911	1915	1915
Austin, D. R., Charlotte, Jeff. Med. Coll., 1917	1917	1918
Austin, Frederick DeC., Charlotte, N. C. Med. Coll., 1907	1907	1908
Austin, J. A., Charlotte, Jeff. Med. Coll., 1882	1882	1904
Barrett, H. P., Charlotte, Univ. of Louisville, 1908	1917	1919
Barron, A. A., Charlotte, Vanderbilt Univ., 1909	1909	1910
Battle, S. W., Charlotte (Hon.), Bellevue, N. Y., 1875	1887	1887
Blalock, B. K., North Charlotte, Univ. of Md., 1913	1913	1917
Bost, T. C., Charlotte, Geo. Washington Univ., 1915	1920	1921
Boyette, E. C., Charlotte, Balt. Med. Coll., 1893	1898	1906
Brenizer, A. G., Jr., Charlotte, Johns Hopkins and Univ. of Heidelberg, 1908	1910	1911
Caldwell, J. H., Charlotte, N. C. Med. Coll., 1914	1914	1914
Craven, Thomas, Huntersville, Jeff. Med. Coll., 1917	1917	1918

Name and Address	*Licensed*	*Joined State Society*
Craven, W. W., Huntersville, Univ. of Md., 1903	1904	1904
Crowell, Andrew J., Charlotte, Univ. of Md., 1893	1892	1894
Davidson, Jno. E. S., Charlotte, Univ. of Md., 1894	1898	1898
DeArmon, J. McC., Charlotte (Hon.), Univ. of Md., 1886	1886	1887
Donnelly, J., Charlotte, Univ. of N. C., 1905	1905	1918
Elliott, J. A., Charlotte, Univ. of Mich., 1914	1919	1920
Faison, I. W., Charlotte (Hon.), Bellevue, N. Y., 1878	1878	1878
Faison, Yates W., Charlotte, Harvard Univ., 1910	1910	1912
Ferguson, R. T., Charlotte, Va. Univ. Coll. of Med., 1906	1909	1909
Fetner, L. M., Charlotte, N. C. Med. Coll., 1913	1913	1915
Gage, L. G., Charlotte, Univ. of Va., 1915	1921	1922
Gallant, Robt. M., Charlotte, N. C. Med. Coll., 1915	1915	1916
Gaul, John Stuart, Charlotte, Pa. Medico-Chiru., 1913	1922	1923
Gibbon, James, Charlotte, Jeff. Med. Coll., 1916	1920	1921
Gibbon, Robt. L., Charlotte (Hon.), Jeff. Med. Coll., 1888	1887	1888
Graham, Wm. A., Charlotte (Hon.), P. and S., N. Y., 1888-1920	1890	1890
Hand, Edgar H., Pineville, N. C. Med. Coll., 1907	1907	1913
Harper, W. T., Charlotte, Jeff. Med. Coll., 1920	1920	1923
Henderson, S. McD., Charlotte, Univ. of Md., 1894	1894	1904
Herring, W. C., Parsons, Kas., Univ. of N. Y., 1890	----	1918
Hipp, E. R.. Charlotte, Univ. of Va., 1918	1920	1921
Houser, O. J., Charlotte, N. C. Med. Coll., 1914	1914	1916
Hovis, L. W., Charlotte, N. C., Med. Coll., 1904	1904	1906
Hunter, L. W., Charlotte, Rt. 1 (Hon.), Bellevue, N. Y., 1875	1880	1880
Hunter, M. C., Huntersville, P. and S., Balt., 1882	1882	1918
Hunter, Myers, Charlotte, Georgetown Univ., 1905	1906	1908
Irwin, Hammer, Pocatella, Idaho, Univ. of Md., 1912	1914	1916
Irwin, J. R., Charlotte (Hon.), Univ. of Md., 1879	1882	1882
Johnston, J. G., Charlotte, Vanderbilt Univ., 1899	1913	1916
Justice, Z. K., Davidson, N. C. Med. Coll., 1903	1917	1919
King, Parks M., Charlotte, Bellevue, N. Y., 1902	1902	1904
Lafferty, Robt H., Charlotte, N. C., Med. Coll., 1906	1906	1908
Leinbach, Robt. F., Charlotte, Univ. of Pa., 1907	1907	1910
Linney, R. Z., Charlotte, Georgetown Univ., 1901	1914	1918
MacConnell, Jno. W., Davidson, Univ. of Md., 1907	1908	1909
McKay, Hamilton W., Charlotte, Jeff. Med. Coll., 1910	1911	1913
McLaughlin, Calvin S., Charlotte, Univ. of Md., 1896	1896	1903
McManus, H. F., Matthews, Atlanta P. and S., 1913	1922	1923
McPhail, L. D., Charlotte, Univ. of Md., 1900	1900	1902
Martin, Wm. F., Charlotte, Univ. of Md., 1920	1920	1923
Martin, W. J., Davidson, Univ. of Va., 1890	1891	1919
Matheson, Jas. P., Charlotte, N. C. Med. Coll., 1902	1902	1907
Mathews, Vann M., Charlotte, Univ. of Pa., 1918	1918	1921
Mills, C. H. C., Charlotte, Univ. of Md., 1897	1900	1919
Misenheimer, C. A., Charlotte (Hon.), N. Y. Univ., 1882	1882	1882
Moore, A. W., Charlotte, Univ. of Va., 1901, Univ. of N. Y., 1902	1912	1913
Moore, Baxter S., Charlotte, Univ. of Va., 1901	1905	1905
Moore, Oren, Charlotte, N. C. Med. Coll., 1911	1911	1912
Munroe, J. P., Charlotte (Hon.), Univ. of Va., 1885	1886	1890

Name and Address	*Licensed*	*Joined State Society*
Myers, Alonzo, Charlotte, N. C. Med. Coll., 1911	1911	1920
Myers, John Q., Charlotte, N. C. Med. Coll., 1904	1904	1910
Nalle, B. C., Charlotte, Univ. of Va., 1903	1905	1905
Nance, C. L., Charlotte, Va. Med. Coll., 1919	1921	1922
Newell, Leone B., Charlotte, Univ. of N. C., 1905	1905	1908
Nisbet, D. Heath, Charlotte, Harvard Med. Dept., 1917	1917	1920
Nisbet, Walter O., Charlotte, S. C. Med. Coll., 1889	1889	1889
Northington, J. M., Charlotte, Va. Med. Coll., 1905	1909	1909
Parsons, W. H., Charlotte, N. C. Med. Coll., 1916	1918	1919
Patterson, Reid, Charlotte, N. C. Med. Coll., 1912	1912	1913
Peeler, Clarence N., Charlotte, N. C. Med. Coll., 1906	1906	1908
Petrie, Robert Wm., Charlotte, Univ. of Md., 1903	1903	1903
Petteway, Geo. H., Charlotte, N. C. Med. Coll., 1913	1913	1914
Pharr, Wm. W., Charlotte (Hon.), P. and S., Balt., 1882	1883	1887
Phillips, C. C., Charlotte, N. C. Med. Coll., 1912	1912	1917
Pressley, Geo. W., Charlotte, Jeff. Med. Coll., 1892	1895	1896
Query, Richard Z., Charlotte, R. F. D., Univ. Va. Coll. of Med., 1907	1907	1908
Ranson, J. Lester, Charlotte, N. C. Med. Coll., 1911	1911	1912
Ray, F. L., Charlotte, Va., Med. Coll., 1919	1919	1922
Reid, Thos. N. Matthews, N. Y. Univ., 1891	1891	1904
Ross, Otho B., Charlotte, Univ. of Pa., 1901	1901	1912
Scruggs, W. Marion, Charlotte, Univ. of Pa., 1914	1914	1920
Shirley, H. C., Charlotte, Johns Hopkins, 1918	1918	1922
Shull, J. Rush, Charlotte, Univ. of Pa., 1910	1910	1913
Simmons, John O., Charlotte, Grant Univ., 1894	1906	1908
Sloan, H. L., Charlotte, Univ. of Pa., 1911	1913	1914
Sparrow, Thos. D., Charlotte, Univ. of Pa., 1920	1920	1923
Squires, Claude, Charlotte, Univ. of Pa., 1919	1919	1921
Strong, Chas. M., Charlotte, Univ. of Md., 1888	1898	1898
Strong, Wm. M., Charlotte, N. C. Med. Coll., 1904	1904	1905
Taylor, H. C., Charlotte, Chadwick Sta., Tenn. Med., 1886	1910	1915
Thompson, S. R., Charlotte, N. C. Med. Coll., 1914	1914	1915
Todd, L. C., Charlotte, Univ. of Michigan, 1918	1920	1920
Townsend, M. L., Curtis Insti., Ind., 1906	1912	1919
Tucker, John H., Charlotte, Univ. of Va., 1899	1899	1911
Tydeman, F. W. L., Wood River, Ill., N. C. Med. Coll., 1912	1912	1918
Wakefield, Harry A., Charlotte, N. C., Med. Coll., 1908	1908	1911
Wakefield, Wm. H., Charlotte, Ky. Med. Coll., 1890	1891	1893
Walker, L. D., Charlotte, Va. Med. Coll., 1908	1917	1919
Whisnant, Albert M., Charlotte, P. and S., Balt., 1893	1893	1899
Whitley, A. W., Matthews, Balt. Med. Sch., 1908	1908	1919
Wingate, G. C., Charlotte, N. C. Med. Coll., 1914	1915	1919
Wishart, Wm. E., Charlotte, N. C. Med. Coll., 1911	1911	1911
Witherspoon, B. J., Charlotte, S. C. Med. Coll., 1894	1900	1911
Woodruff, Julian S., Charlotte, Univ. of Md., 1920	1920	1923
Worthington, F. D., Charlotte, Johns Hopkins, 1917	1921	1922
Wright, Thos. H., Charlotte, Univ. of Va., 1901	1904	1910

MITCHELL-WATAUGA COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President,	----	----
Secretary,	----	----
Bingham, G. D., Sugar Grove, Univ. of Tenn., 1906, Lincoln-Memorial University, 1908	----	1920
Bradshaw, Isaac W., Relief, Lincoln-Memorial Univ., Tenn., 1911	----	1909
Butt, Virgil R., Bakersville, Jeff. Med. Coll., 1886	----	1907
Gouge, A. E., Bakersville, N. C. Med. Coll., 1917	1917	1920
Hardin, R. H., Boone, Univ. of N. C., 1914	1914	1919
Jones, J. Walter, Boone, Chattanooga Med. Coll., 1900	1902	1904
Lambert, C. F., Alta Pass, Jeff. Med. Coll., 1921	1921	1923
Perry, H. B., Valle Crucis, Univ. of N. C., 1905	1905	1922
Peterson, C. A., Spruce Pine, N. C. Med. Coll., 1907	1907	1908
Peterson, J. M., Spruce Pine, Lincoln Memo. Univ., Tenn., 1902	1918	1921

MONTGOMERY COUNTY SOCIETY

President, A. F. Thompson, Troy, Med. Coll. of Ind., 1895	1895	1904
Secretary, Chas. Daligny, Troy, Military Med. School, Paris, 1878	1885	1891
Boyles, A. C., Troy, Univ. of Md., 1887	1887	1912
Coppedge, N. P., Candor, Univ. of N. C., 1903	1903	1910
Dameron, Ernest L., Star, N. C. Med. Coll., 1911	1911	1913
Ingram, Chas. B., Mt. Gilead, Jeff. Med. Coll., 1886	1886	1902
McMillan, J. M., Candor, Atlanta P and S., 1909	1909	1911
Nicholson, N. G., Jr., Mt. Gilead, N. C. Med. Coll., 1917	1917	1920
Rankin, Pressly R., Mt. Gilead, N. C. Med. Coll., 1910	1910	1912
Shamburger, J. B., Star (Hon.), Univ. of Md., 1890	1890	1892

MOORE COUNTY SOCIETY

President, A. McN. Blue, Carthage, Tulane Univ., 1915	1916	1917
Secretary, J. W. Dickie, Southern Pines, Jeff. Med. Coll., 1918	1920	1921
Achorn, John W., Pine Bluff, Me. Med., 1887, Bellevue, 1889	1899	1899
Blair, A. McNiel, Southern Pines, Univ. of N. Y., 1897	1905	1906
Bowman, H. E., Aberdeen, N. C. Med. Coll., 1904	1904	1919
Davis, J. Franklin, High Falls, Med. Coll. of Va., 1912	1912	1914
Grier, Chas. T., Carthage, N. C. Med. Coll., 1910	1912	1913
Holt, Erastus E., Southern Pines, Columbia Univ., 1875	1921	1922
McDonald, A. A., Jackson Springs, N. C. Med. Coll., 1905	1905	1912
McDuffie, W. N., Hemp, Emory Univ., 1916	----	1921
McLeod, A. H., Aberdeen, Baltimore Med. Coll., 1896	1896	1904
McLeod, Gilbert M., Carthage, Univ. of Md., 1882	1885	1904
Marr., W. M., Pinehurst, Tufts Coll. of Med., 1907	1907	1915
Milliken, J. S., Southern Pines, Jeff. Med. College, 1915	1915	1916
Mudgett, W. C., Southern Pines, Univ. of Md., 1903	1908	1911
O'Briant, A. L., Cameron, Jeff. Med. Coll., 1920	1920	1922
Rosser, R. G., Vass., N. C. Med. Coll., 1909	1909	1917
Shields, Henry B., Carthage, Atlanta Med. Coll., 1882	1887	1904
Street, M. E., Glendon, P. and S., Balt., 1893	1893	1902
Thompson, Fred, Pine Bluff, Harvard Univ., 1888	1912	1914

NASH COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, J. A. Speight, Rocky Mount, Jeff. Med. Coll., 1906	1906	1916
Scretary, W. B. Kinlaw, Rocky Mount., Univ. of Pa., 1921	1921	1923
Battle, Ivan Proctor, Rocky Mount, Univ. of Md., 1889	1889	1914
Boice, E. S., Rocky Mount, Univ. of Pa., 1909	1914	1915
Brantley, Hassell, Spring Hope, Jeff. Med. Coll., 1888	1888	1901
Coppedge, T. O., Nashville, Coll. of P. and S., Balt., 1908	1909	1917
Cutchen, J. Henry, Whitakers, Univ. Med. Coll., Richmond, 1911	1911	1915
Deans, A. W., Battleboro, Med. Coll. of Va., 1915	1915	1917
Dixon, W. H., Rocky Mount, Univ. of Pa., 1919	1919	1922
Fleming, M. I., Rocky Mount, Jeff. Med. Coll., 1905	1906	1919
Hines, E. R., Rocky Mount, Med. Coll. of S. C., 1916	1916	1917
Killinger, R. R., Rocky Mount, Yale, 1919	----	1921
Knowles, D. L., Rocky Mount, Univ. of Pa., 1918	1918	1920
Kornegay, L. W., Rocky Mount, N. C. Med. Coll., 1906	1906	1914
Lane, Jno. L., Rocky Mount, N. C. Med. Coll., 1906	1906	1914
Large, H. Lee, Rocky Mount, Med. Coll. of Va., 1917	1918	1918
Looney, J. J. W., Rocky Mount, Univ. of Va., 1919	1919	1919
Marriott, Henry B., Battleboro, Mo. Med. Coll., 1883	1883	1904
Martin, J. H., Battleboro, R. F. D., Univ. of Nashville, 1903	1904	1916
Noell, R. H., Rocky Mount, Univ. of Md., 1916	1916	1920
Perry, E. M., Rocky Mount, P. and S., Baltimore, 1907	1907	1920
Perry, H. G., Louisburg, P. and S., Baltimore, 1915	1915	1918
Quillen, Emile B., Rocky Mount, Univ. of Md., 1904	1906	1914
Smith, C. T., Rocky Mount, Univ. of Pa., 1918	1918	1920
Speight, J. P., Rocky Mount, Jeff. Med. Coll., 1906	1906	1917
Staley, S. Walter, Rocky Mount, Med. College of S. C., 1901	1901	1914
Thorpe, A. T., Rocky Mount, Univ. of Pa., 1921	1921	1923
Willis, B. C., Rocky Mount, Med. Coll. of Va., 1909	1915	1916
Wimberly, G. L., Rocky Mount., Univ. of Md., 1883	1883	1916
Winstead, J. A., Nashville, N. C. Med. Coll., 1914	1916	1916

NEW HANOVER COUNTY SOCIETY

President, Wm. H. Moore, Wilmington, Jeff. Med. Coll., 1910	1910	1911
Secretary, D. B. Sloan, Wilmington, Univ. of Pa., 1914	1914	1920
Bellamy, Robt. H., Wilmington, Jeff. Med. Coll., 1902	1902	1902
Bowdoin, Geo. W., Wilmington, Med. Coll. of Va., 1914	1914	1916
Bulluck, Ernest S., Wilmington, Univ. of Md., 1911	1911	1911
Codington, H. A., Wilmington, Univ. of Md., 1911	1915	1917
Cranmer, J. B., Wilmington, Univ. of N. C., 1905	1905	1907
Croom, G. H., Wilmington, N. C. Med. Coll., 1909	1909	1916
Crouch, A. McR., Wilmington, Jeff. Med. Coll., 1916	1916	1918
Davis, Ralph H., Wilmington, Geo. Washington Univ., 1917	1920	1920
Elliot, A. H., Wilmington, Jeff. Med. Coll., 1919	1919	1921
Evans, J. E., Wilmington, Univ. of Md., 1916	1916	1916
Farthing, L. E., Wilmington, Univ. of N. C., 1906	1906	1913
Freeman, Jere, Wilmington, Med. Coll. of Va., 1918	1921	1922
Galloway, Walter C., Wilmington (Hon.), Univ. of Md., 1874	1880	1880

Name and Address	*Licensed*	*Joined State Society*
Graham, Benj. R., Wilmington, Univ. of Va., 1895	1895	1916
Green, Thos. M., Wilmington, Univ. of Md., 1900	1900	1904
Hamilton, John H., Wilmington, Univ. of Mass., 1916	1916	1922
Harriss, Andrew H., Wilmington, Medico-C., Phila., 1893	1892	1894
Hart, E. R., Wilmington, Univ. of Md., 1901	1901	1818
Hoggard, J. T., Wilmington, Univ. Med. Coll., Richmond, 1900	1907	1922
Honnet, Jos. H., Wilmington, P. and S., Balt., 1896	1901	1904
Hooper, Jos. W., Wilmington, Univ. of Md., 1909	1912	1919
Jewett, Robt. D., Wilmington (Hon.), Univ. of Va., 1888	1890	1890
Johnson, Geo. W., Wilmington, Univ. of Pa., 1920	1920	1921
Koonce, S. Everett, Wilmington, P. and S., Balt., 1896	1896	1900
Love, W. J., Wilmington (Hon.), S. C. Med. College, 1861	1861	1874
McDonald, A. D., Wilmington (Hon.), Wash. Univ. Med. Sch., 1877	1870	1879
McMillan, W. D., Wilmington (Hon.), Univ. of Md., 1868	1885	1892
Mebane, W. C., Wilmington, N. C. Med. Coll., 1905	1905	1916
Miller, J. F., Wilmington, Med. Chi., Phila., 1906	1915	1919
Moore, Julian A., Wilmington, Univ. of Pa., 1918	1918	1921
Murchison, D. R., Wilmington, Johns Hopkins, 1916	1916	1923
Murphy, Jno. G., Wilmington, Univ. of Louisville, 1903	1903	1905
Peterson, W. C., Wilmington, Univ. of Pa., 1916	1920	1921
Robertson, Jas. F .,Wilmington, Univ. of Pa., 1913	1913	1916
Schonwald, John T., Wilmington (Hon.), Long Island Med. C., 1879	1880	1881
Shaw, Colin, Wilmington, N. C. Med. Coll., 1911	1911	1917
Sidbury, J. B., Wilmington, Columbia, Univ. N. Y., 1912	1915	1916
Slocum, R. B., Wilmington, Johns Hopkins, 1905	1907	1907
Smith, Slade A., Wilmington, N. C. Med. Coll., 1907	1907	1921
Weathers, Bahnson, Wilmington, Univ. of St. Louis, 1917	1921	1922
Wessell, John C., Wilmington, Univ. of Md., 1900	1900	1900
Williams, L. P., Wilmington, Bellevue Med. Coll., 1918	1918	1921
Wood, E. J., Wilmington, Univ. of Pa., 1902	1903	1903
Wysong, H. C., Wilmington, Univ. of Tenn., 1917	1921	1922

NORTHAMPTON COUNTY SOCIETY

President, L. E. McDaniels, Lasker, Univ. of Md., 1911	1915	1916
Secretary, W. R. Parker, Woodland, Med. Coll. of Va., 1916	1916	1919
Boone, S. B., Jackson, Va. Coll. of Med., 1911	1911	1921
Fleetwood, Joe E., Conway, Wake Forest Coll., 1919, Tulane U., 1921	1921	1923
Lewis, H. W., Jackson (Hon.), Univ. of N. Y., 1877	1885	1887
Outland, C. L., Woodland, Med. Coll. of Va., 1917	1917	1920
Parker, Clifton G., Woodland, Univ. of Va., 1907	1907	1913
Parker, C. P., Seaboard, Univ. Coll. of Med., Va., 1915	1915	1916
Parker, Paul G., Jackson, Med. Coll. of Va., 1916	1916	1917
Vaughan, J. C., Rich Square, Med. Coll. of Va., 1915	1915	1916

ONSLOW COUNTY SOCIETY

President, A. M. McCuiston, Richlands, N. C. Med. Coll., 1911	1911	1917
Secretary,	----	----
Cox, E. L., Jacksonville (Hon.), Univ. of Md., 1889	1892	1892

Name and Address	*Licensed*	*Joined State Society*
Henderson, John P., Swansboro, Va. Med. Coll., 1918	1919	1921
Sutton, Carl W., Richlands, Tulane Med. Coll., 1905	1905	1907
Thompson, Cyrus, Jacksonville, Univ. of Pa., 1878	1885	1905

PAMLICO COUNTY SOCIETY

President, D. A. Dees, Bayboro, Balt. Med. Coll., 1903	1903	1905
Secretary, J. J. Purdy, Oriental, Med. Coll. of Va., 1900	1914	1915
Attmore, Geo. S., Stonewall (Hon.), Wash. Univ. School of Med., 1870	1870	1872
McCotter, St. Elma, Bayboro, P. and S., Atlanta, 1908	1908	1909
Woodward, E. D., Bayboro, Chicago Coll. of Med. and Surg., 1919	1920	1921

PASQUOTANK-CAMDEN-DARE COUNTY SOCIETY

President, R. B. Davis, Weeksville, Med. Coll. of Va., 1915	1916	1917
Secretary, M. S. Bulla, Elizabeth City, Miama Med. Coll., O., 1905	1921	1922
Combs, J. Howard, Elizabeth City, Jeff. Med. Coll., 1918	1918	1919
Fearing, Isaiah, Elizabeth City, P. and S., Balt., 1896	1896	1904
Fearing, Zenas, Elizabeth City, Va. Univ. Coll. of Med., 1901	1901	1914
Griggs, John B., Elizabeth City, Univ. of Md., 1892	1892	1904
Hoggard, Wm. A., R. 3, Hertford, Univ. Coll. of Med., Va., 1907	1907	1910
Hoyle, Hughes B., Manteo, N. C. Med. Coll., 1896	1896	1904
Johnston, W. W., Manteo, N. C. Med. Coll., 1913	1913	1920
Kendrick, R. L., Elizabeth City, Univ. of Va., 1913	1913	1915
Lister, E. W., Weeksville, Med. Coll. of Va., 1896	1896	1916
Newby, G. E., Hertford, Jeff. Med. Coll., 1900	1901	1916
Peters, W. A., Elizabeth City, Med. Coll. of Va., 1915	1915	1916
Saliba, John, Elizabeth City, Univ. of Edinburgh, Scotland, 1893	1914	1914
Sawyer, W. W., Elizabeth City, Univ. of Md., 1903	1903	1904
Stephens, W. L., Shiloh, Univ. Coll. of Va., 1912	1912	1914
Walker, H. D., Elizabeth City, Univ. of Md., 1902	1902	1902
Williams, Claude B., Elizabeth City, Univ. Coll. of Med. Va., 1903	1903	1907

PENDER COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Orr, W. J. B., Iaeger, W. Va., Univ. of Md., 1920	1920	1922
Taylor, W. I., Burgaw, N. C. Med. Coll., 1902	1904	1905

PERSON COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Baynes, R. S., Hurdle Mills, P. and S., Balt., 1881	1881	1904
Bradsher, Wm. A., Roxboro, Univ. of Md., 1904	1904	1905
Gentry, Geo. W., Timberlake, Univ. of N. C., 1910	1910	1911
Long, D. T., Hurdle Mills, Emory Univ. of Med., Atlanta, 1917	1917	1919
Long, Walter T., Roxboro, Balt. Med. Coll., 1905	1905	1907
Love, Bedford E., Roxboro, Univ. of Md., 1904	1904	1905
Merritt, John H., Woodsdale, R. 2, Univ. of N. C., 1906	1907	1908
Nichols, Austin F., Roxboro, Univ. of N. C., 1909	1908	1909

Name and Address	*Licensed*	*Joined State Society*
Swann, Jos. F., Gastonia, P. and S., Baltimore, 1896	1896	1905
Thaxton, B. A., Roxboro, Jeff. Med. Coll., 1914	1914	1916

PITT COUNTY SOCIETY

President, M. T. Frizzell, Ayden, Univ. of Md., 1907	1907	1909
Secretary	----	----
Phila., 1911	1911	1915
Basnight, Thos. G., Stokes, Univ. of Md., 1905	1905	1907
Beasley, E. B., Fountain, Univ. of Pa. and School of Med., Philadelphia, 1911	1911	1915
Chester, P. J., Greenville, N. C. Med. Coll., 1913	1913	1920
Cox, B. T., Winterville, Univ. of Md., 1888	1888	1890
Dawson, Walter W., Grifton, Univ. of Md., 1897	1897	1900
Dixon, G. G., Ayden, Med. Coll. of Va., 1915	1915	1917
Dixon, Joseph, Ayden, Med. Coll. of Va., 1894	1894	1895
Dixon, Wm. H., Ayden, Univ. of Va., 1901	1901	1903
Ellen, C. J., Greenville, Univ. Coll. of Richmond, 1911	1911	1919
Garrenton, Cecil, Bethel, Med. Coll. of Va., 1908	1908	1915
Green, J. C., Greenville, Med. Coll. of Va., 1900	1900	1915
Hemmingway, J. D., Bethel, N. C. Med. Coll., 1915	1917	1917
Jones, C. M., Grimesland, Univ. of Md. and P. and S., Balt., 1892	1892	1895
Laughinghouse, Chas. O'H., Greenville, Univ. of Pa., 1893	1893	1894
Morrill, D. S., Farmville, Baltimore Med. Coll., 1897	1897	1903
Morrill, Jenness, Falkland, Univ. of Md., 1888	1888	1900
Moseley, H. P., Farmville, Univ. Coll. of Med., Richmond, 1912	1912	1915
Nobles, Jos. E., Greenville (Hon.), Jeff. Med. Coll., 1899	1899	1902
Pace, K. B., Greenville, Jeff. Med. Coll., 1914	1914	1920
Skinner, Louis C., Greenville, Univ. of Md., 1901	1901	1903
Summerell, G. H., Ayden, Med. Coll. of Va., 1915	1917	1919
Whitfield, Wm. Cobb, Grifton (Hon.), Univ. of Md., 1884	1884	1884

RANDOLPH COUNTY SOCIETY

President, C. A. Hayworth, Asheboro, Univ. of Md., 1902	1913	1914
Secretary, W. L. Lambert, Asheboro, Jeff. Med. Coll., 1921	1921	1923
Asbury, Francis E., Asheboro (Hon.), S. C. Med. Coll., 1876	1899	1904
Craven, F. C., Ramseur, Univ. of Md., 1913	1913	1914
Fox, Thos. I., Franklinville, Vanderbilt Univ., 1894	1899	1904
Hubbard, Chas. C., Farmer, Jeff. Med. Coll., 1888	1890	1904
Hunter, J. V., Asheboro, Univ. of Louisville, 1898	1898	1905
Moore, Wm. James, Asheboro, P. and S., Balt., 1893	1893	1901
Myers, R. W., Fullers, R. 1, Grant Univ., 1897	----	1909
Redding, Alex. H., Cedar Falls, Coll. of P. and S., Balt., 1887	1881	1904
Shepard, F. H., Liberty, Univ. of Tenn., 1908	1908	1919
Sumner, Wm. I., Randleman, Univ. of Tenn., 1893	1893	1904
Tate, C. S., Ramseur, Balt. Med. Coll., 1893	1896	1914
Wilkerson, Chas. E., Randleman, Univ. of Nashville, 1907	1908	1909

RICHMOND COUNTY SOCIETY

President, W. D. James, Hamlet, Jeff. Med. Coll., 1908	1908	1915
Secretary, A. C. Everett, Rockingham, Univ. of Md., 1897	1897	1903

Name and Address	*Licensed*	*Joined State Society*
Garrett, F. B., Rockingham, N. C. Med. Coll., 1912	1912	1914
Garrett, F. J., Rockingham, Univ. of Md., 1889	1887	1904
Hatcher, M. A., Hamlet, Med. Coll. of Va., 1918	1920	1921
Henry, T. B., Rockingham, Columbia Univ., P. and S., N. Y., 1916	1920	1921
Howell, W. L., Ellerbe, N. C. Med. Coll., 1910	1910	1911
Hunter, Norman C., Rockingham, Medico-Chi. Coll. of Phila., 1899	1899	1904
James, Albert W., Hamlet, Jeff. Med. Coll., 1918	1918	1921
Kinsman, Henry F., Hamlet, Univ. of Vermont, 1894	1897	1904
Ledbetter, Jas. McQ., Rockingham, Vanderbilt Univ., 1894	1894	1903
McIntosh, W. R., Roberdell, N. C. Med. Coll., 1913	1916	1917
Maness, J. M., Ellerbe, Univ. of N. C., 1909	1909	1910
Terry, Wm. C., Hamlet, N. C. Med. Coll., 1911, Univ. of Md., 1912	1912	1914

ROBESON COUNTY SOCIETY

President, R. S. Beam, Lumberton, Jeff. Med. Coll., 1912	1912	1915
Secretary, J. A. Martin, Lumberton, Med. Coll. of Va., 1915	1915	1917
Andrews, Nathan H., Rowland, N. C. Med. Coll., 1911	1911	1912
Baker, Horace M., Lumberton, Harvard Med. Sch., 1917	1917	1919
Bowman, E. L., McDonalds, Med. Coll. of Va., 1914	1914	1916
Brown, J. P., Fairmont, Univ. of Md., 1883	1887	1893
Brunson, E. P., Boardman, Jeff. Med. Coll., 1921	1921	1923
Carmichael, T. W., Rowland, Ky. Univ. of Med., 1904	1911	1919
Costner, Thos. F., Lumberton, Jeff. Med. Coll., 1882	1885	1918
Hall, P. B., Pembroke, N. C. Med. Coll., 1903	1903	1904
Hardin, E. R., Lumberton, Univ. of Ga., 1911	1911	1920
Hays, A. H., Fairmont, Univ. of Ga., 1917	1917	1919
Hodgin, H. H., Red Springs, Univ. of Md., 1905	1906	1907
Johnson, C. T., Red Springs, Jeff. Med. Coll., 1920	1920	1922
Johnson, Thos. C., Lumberton, Med. Coll. of Va., 1903	1903	1903
Knox, John, Jr., Lumberton, Univ. of Md., 1906	1907	1907
McClellan, Jos. O., Maxton, Med. Coll. of Va., 1908	1912	1913
McKay, W. P., Red Springs, Tulane Univ., 1916	1916	1921
McMillan, Benj. F., Red Springs (Hon.), Univ. of Md., 1882	1884	1884
Nash, J. Fred, St. Pauls, N. C. Med. Coll., 1914	1914	1916
Poole, Claud T., St. Pauls, N. C. Med. Coll., 1907	1908	1913
Pope, Henry T., Lumberton, N. C. Med. Coll., 1894	1893	1902
Price, H. L., Fairmont, N. C. Med. Coll., 1914	1914	1920
Ricks, Leonard E., Fairmont, Med. Coll. of Va., 1896	1896	1913
Smith, John McN., Rowland, Jeff. Med. Coll., 1908	1908	1909
Stamps, Thos., Lumber Bridge (Hon.), Univ. of Louisville, 1888	1888	1890
Whitehead, S. L., Lumberton, Jeff. Med. Coll., 1921	1921	1923

ROCKINGHAM COUNTY SOCIETY

President, J. T. Taylor, Madison, Univ. of Md. and P. and S., Balt., 1908	1908	1910
Secretary, P. W. Fetzer, Madison, Dept. of Med., Univ. of Va., 1916	1916	1920
Abernathy, Miles B., Reidsville, N. C. Med. Coll., 1906	1906	1910

Name and Address	*Licensed*	*Joined State Society*
Boaz, Thos. A., Stoneville, Coll. of P. and S., Balt., 1892	1892	1905
Cummings, M. P., Reidsville, Jeff. Med. Coll., 1911	1911	1914
Dillard, G. P., Draper, Chicago Coll. of M. and S., 1916	1916	1919
Dixon, Hubert C., Madison, Univ. and Bellevue Hosp., Coll. N. Y., 1916	1916	1921
Jett, Samuel G., Reidsville, Univ. of the South, 1903	1908	1911
Johnson, W. A., Reidsville, R. F. D., N. C. Med. Coll., 1907	1909	1910
McBryde, M. H., Reidsville, Univ. Coll. of Med., Va., 1901	1901	1904
McGehee, John Wm., Reidsville, Univ. of Md., 1904	1904	1905
Martin, S. L., Leaksville, Balt. Med. Coll., 1892	1892	1904
Matthews, Wm. W., Spray, Chicago Coll. of M. and S., 1913	1915	1918
Ray, John B., Leaksville, Balt. Med. Coll., 1898	1898	1898
Stewart, J. T., Summerfield, R. F. D.	1889	1898
Stokes, P. B., Ruffin, Med. Coll. of Va., 1917	1917	1920
Taylor, T. G., Leaksville, Ky. School of Med., 1877	1877	1910
Tuttle, A. F., Spray, N. C. Med. Coll., 1901	1901	1907
Webb, S. Edgar, Draper, N. C. Med. Coll., 1908	1908	1916
Wharton, Chas. R., Ruffin, Med. Coll. of Va., 1897	1897	1904
Wilson, W. P., Madison, N. C. Med. Coll., 1908	1908	1916

ROWAN COUNTY SOCIETY

President, Wesley C. Slate, Spencer, Univ. of Tenn., 1903	1909	1913
Secretary, Jas. E. Stokes, Salisbury, Univ. of Md., 1892	1900	1901
Armstrong, C. W., Salisbury, Univ. of Md., 1914	1914	1915
Black, O. R., Landis, N. C. Med. Coll., 1914	1914	1918
Boger, D. T., Rockwell, N. C. Med. Coll., 1906	1906	1921
Boyden, Wm. C., China Grove., N. C. Med. Coll., 1913	1913	1914
Brawley, M. H., Salisbury, N. C. Med. Coll., 1910	1912	1914
Brawley, Robert V., Salisbury, Univ. Coll. of Med., Va., 1903	1903	1904
Brown, Clarence E., Faith, N. C. Med. Coll., 1918	1918	1921
Brown, G. A., Mt. Ulla, Univ. of Va., 1897	1897	1898
Busby, Julian G., Spencer, Univ. of Md., 1904	1904	1905
Choate, Glenn Wm., Salisbury, Univ. Med. Coll. of Va., 1909	1909	1909
Clement, Edward B., Salisbury, Jeff. Med. Coll., 1906	1906	1913
Council, J. B., Salisbury (Hon.), P. and S., Balt., 1884	1885	1885
Ellis, F. A., Salisbury, Univ. of Pa., 1919	1919	1919
Flemming, G. M., Cleveland, Emory Univ. Sch. of Med., 1919	1921	1921
Heilig, Herman G., Salisbury, Univ. of Maryland, 1899	1899	1904
McKenzie, B. W., Salisbury, Jeff. Med. Coll., 1916	1916	1920
Marsh, Frank B., Salisbury, Jeff. Med. Coll., 1919	1919	1922
Monk, Henry L., Salisbury, Med. Coll. of Va., 1897	1899	1903
Newman, Harold H., Salisbury, Johns Hopkins Univ., 1913	1914	1916
Peeler, John H., Salisbury, Va. Univ. Coll. of Med., 1899	1899	1904
Richardson, R. W., Salisbury, Univ. of N. C., 1920	1920	1923
Shafer, Irving E., Salisbury, N. C. Med. Coll., 1914	1914	1914
Sigman, Frederick G., Spencer, Univ. Med. Coll. of Va., 1909	1909	1910
Spencer, Frederick B., Salisbury, Univ. of N. C., 1909	1909	1911
Summerell, E. M., China Grove (Hon.), Univ. of Pa., 1883	1883	1883
Trantham, H. T., Salisbury (Hon.), Univ. of N. Y., 1875	1878	1879

Name and Address	*Licensed*	*Joined State Society*
Van Poole, C. M., Salisbury (Hon.), P. and S., Balt., 1880	1880	1880
West, Robert M., Salisbury, Med. Coll. of Va., 1904	1900	1904
Whitehead, John, Salisbury (Hon.), Univ. of Pa., 1880	1880	1880
Woodson, Chas. W., Salisbury, P. and S., N. Y., 1904	1905	1907

RUTHERFORD COUNTY SOCIETY

President, Robert H. Crawford, Rutherfordton, Johns Hopkins, 1914	1920	1921
Secretary, Wm. C. Bostic, Forest City, N. C. Med. Coll., 1905	1905	1905
Allhands, John M., Cliffside, Chicago Coll. of M. and S., 1910	1910	1911
Andrews, Robert M., Bostic, Memphis Hosp. Med. Coll., 1904	1904	1905
Biggs, Montgomery H., Rutherfordton, Univ. of Pa., 1897	1907	1908
Buchanan, C. L., Union Mills, Univ. of Nashville, 1910	1910	1914
Duncan, Amos E., Avondale, N. C. Med. Coll., 1919	1919	1920
Gold, Chas. F., Ellenboro, Univ. of N. C., 1910	1910	1911
Harrill, L. B., Caroleen, Grant Univ., 1897	1902	1904
Head, W. T., R. F. D. No. 4, Campbells, S. C.	----	1923
Hicks, Romeo, Henrietta, Sou. Med. Coll., Atlanta, 1888	----	1899
Hunt, J. F., Spindale, Univ. of Tenn., 1900	1900	1912
Logan, F. W. F., Rutherfordton, N. C. Med. Coll., 1916	1916	1919
Lovelace, Thos. C., Henrietta, N. C. Med. Coll., 1917	1920	1920
Murphy, D. B., Rutherfordton, Univ. of Pa., 1916	1916	1923
Norris, Henry, Rutherfordton, Univ. of Pa., 1896	1907	1908
Reid, Geo. P., Forest City, Univ. Coll. of Va., 1895	1894	1899
Rucker, Adin A., Green Hill, Univ. of Md., 1908	1908	1909
Schenck, D. R., Rutherfordton, Jeff. Med. Coll., 1883	1884	1918
Scruggs, F. B., Cliffside, Jeff. Med. Coll., 1919	1919	1922
Thompson, W. A., Rutherfordton, P. and S., Balt., 1885	----	1904
Twitty, John C., Rutherfordton, Balt. Med. Coll., 1892	1892	1904

SAMSON COUNTY SOCIETY

President, Wm. H. Sloan, Garland, P. and S., Baltimore, 1916	1916	1920
Secretary, E. T. Hollingsworth, Clinton, N. C. Med. Coll., 1912	1912	1915
Brewer, J. Street, Roseboro, Jeff. Med. Coll., 1919	1919	1921
Kerr, John D., Clinton, Univ. of Md., 1908	1908	1910
Lee, J. Marshall, Newton Grove, Med. Coll. of Va., 1920	1920	1923
Matthews, James O., R. F. D., Clinton, Univ. Coll. of Med., Va., 1879	1879	1902
Maynard, A. A., Kerr, Univ. of Md., 1885	1885	1923
Parker, J. R., Clinton, Univ. of Md.	----	1919
Parker, O. L., Clinton, Med. Coll. of Va., 1918	1918	1919
Sessoms, E. T., Autryville, N. C. Med. Coll., 1915	1915	1917
Sikes, Gibson L., Salemburg, Univ. Coll. of Med., Va., 1900	1900	1902
Underwood, O. E., Roseboro, Univ. Coll. of Med., Va., 1909	1909	1910
Wilson, Robert B., Newton Grove, Ky. School of Med., 1889	1889	1904

SCOTLAND COUNTY SOCIETY

President, W. G. Shaw, Wagram, P. and S., Balt., 1892	1895	1904
Secretary, Allen McLean, Wagram, Univ. of Md., 1908	1908	1911

Name and Address	*Licensed*	*Joined State Society*
Cannady, N. B., Laurinburg, Univ. of N. C., 1912	1912	1916
Erwin, Evan A., Laurinburg, Med. Coll. of S. C., 1912	1913	1913
Gibson, John S., Gibson, Univ. of Md., 1905	1905	1907
James, F. P., Laurinburg, Jeff. Med. Coll., Phila, 1908	1908	1908
John, Peter, Laurinburg, Univ. of Md., 1897	1897	1904
Livingston, Everett A., Gibson, Univ. of Md., 1912	1912	1913
McLean, Peter, Laurinburg, Univ. of Md., 1906	1907	1908
Pate, James G., Gibson, Univ. of Pa., 1905	1905	1917
Wilcox, J. W., Laurel Hill, Univ. of N. C., 1906	1906	1906
Wilkes, Marcus B., Laurel Hill, N. C. Med. Coll., 1912	1912	1923

STANLEY COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Allen, Jos. A., New London, Univ. Coll. of Med., Va., 1901	1901	1904
Anderson, Jasper N., Albemarle, Univ. of Md., 1895	1895	1895
Cox, Benj. F., Palmerville, P. and S., Balt., 1886	1886	1908
Dunlap, Lucius Victor, Albemarle, Univ. of N. C., 1909	1909	1910
Hall, Julius C., Albemarle, Univ. Coll. of Med., Va., 1890	1899	1908
Hartsell, F. E., Oakboro, Balt. Med. Coll., 1895	1895	1902
Hathcock, Thos. A., Norwood, Univ. of Md., 1893	1893	1904
Hill, Wm. I., Albemarle, Univ. of Md. and P. and S., Balt., 1897	1897	1904
Laton, Jas. F., Albemarle, N. C. Med. Coll., 1909	1909	1910
Lentz, C. M., Albemarle, N. C. Med. Coll., 1909	1909	1910
Moore, D. Bain, Badin, Univ. Coll. of Med., Va., 1913	1913	1915
Shaver, W. T., Badin, Univ. of Md., 1918	1920	1921

STOKES COUNTY SOCIETY

President, J. L. Hanes, Pine Hall, P. and S., Balt., 1902	1902	1920
Secretary, C. J. Helsabeck, Germantown, U. of Md., 1902	1919	1922
Jas. H. Ellington, Sandy Ridge. P. and S., Balt., 1872	1885	1904
R. S. Helsabeck, Mizpah, N. C. Med. Col., 1913	1913	1920
R. H. Moorefield, R. No. 1, Westfield, N. C. Med. Col., 1906	1906	1917
Grady E. Stone, King, Med. Col. of Va., 1915	1915	1920
S. F. Tillotson, King, N. C. Med. Col., 1905	1905	1922
Reuben G. Tuttle, Walnut Cove, N. C. Med. Col., 1909	1909	1913

SURRY COUNTY SOCIETY

President, C. A. Baird, Mt. Airy, N. C. Med. Coll., 1904	1904	1912
Secretary, E. C. Ashby, Mt. Airy, Univ. of Pa., 1914	1914	1916
Bernard, Holman, Pinnacle, Med. Coll. of Va., 1912	1914	1919
Bryant, Chas. G., Elkin, Louisville Med. Coll., 1894	1902	1904
Flippin, R. E. L., Pilot Mountain, Balt. Med. Coll., 1892	1897	1901
Flippin, Samuel T., Siloam, N. C. Med. Coll., 1898	1898	1898
Garvey, R. R., Elkin, N. C. Med. Coll., 1915	1915	1919
Hollingsworth, Edward M., Mt. Airy, Univ. Coll. Med., Va., 1898	1898	1904
Hollingsworth, R. E., Mt. Airy, Univ. Coll. of Med., Va., 1904	1899	1904

Name and Address	*Licensed*	*Joined State Society*
Lancaster, R. M., Dobson, N. C. Med. Coll., 1914	1916	1917
Lovill, Robt. J., Mt. Airy, Univ. of Md., 1910	1910	1912
Martin, Moir S., Mt. Airy, Univ. Coll. of Med., Va., 1905	1909	1916
Reece, Jas. M., Elkin, P. and S., Balt., 1886	1886	1904
Ring, Joseph W., Elkin, P. and S., Balt., 1880	1885	1904
Rowe, H. B., Mt. Airy, Univ. of Md., 1910	1910	1914
Royall, M. A., Elkin, P. and S., Balt., 1885	1885	1913
Salmons, H. C., Jonesville, N. C. Med. Coll., 1904	1904	1908
Smith, James B., Pilot Mountain, P. and S., Balt., 1884	1885	1896
Smith, James T., Westfield, N. C. Med. Coll., 1898	1899	1918
Stone, Wesley M., Dobson, N. C. Med. Coll., 1904	1906	1907
Taylor, William S., Mt. Airy, Jeff. Med. Coll., 1874	1874	1894
Wellborn, William R., Elkin, N. C. Med. Coll., 1905	1908	1913
Williams, Lester L., Mt. Airy, Md. Med. Coll., 1913	1913	1916
Woltz, John L., Mt. Airy, Sou. Med. Coll. of Ga., 1897	1902	1904

SWAIN COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Clark, W. H., Dorsey, Louisville Med. Coll., 1890	1902	1922
Holt, R. D., Cherokee, Med. Coll. of Va., 1899	1899	1904
Tidmarsh, H. W., Whittier, Univ. of N. C., 1914	1916	1920

TRANSYLVANIA COUNTY SOCIETY

President,	----	----
Secretary,	----	----
English, Edwin S., Brevard, Univ. of the South, 1901	1902	1904
English, E. L., Rosman, Univ. of Ga., 1916	1916	1922
Lyday, Abram E., Penrose, Lincoln Memorial Univ., 1891	1909	1904
Lyday, Wm. M., Brevard, Univ. of Md., 1885	1885	1904
Lynch, Geo. B., Rosman, Univ. of Md., 1914	1920	1923
Summey, T. J., Brevard, Jeff. Med. Coll., 1915	1915	1916

UNION COUNTY SOCIETY

President, Jas. R. Jerome, Wingate, Med. Coll. of Va., 1890	1890	1904
Secretary, R. L. Payne, Monroe, Tulane Univ., 1911	1911	1912
Armfield, Romulus, Marshville, Med. Coll. of Va., 1881	1883	1904
Ashcraft, J. E., Monroe, Univ. of N. Y., 1887	1887	1890
Blair, M. P., Marshville, Med. Coll. of Va., 1895	1895	1895
Fitzgerald, J. Y., Indian Trail, Jeff. Med. Coll., 1889	1889	1904
Garren, R. H., Monroe, Univ. of Nashville, 1900	1901	1917
Love, William M., Unionville, N. C. Med. Coll., 1915	1915	1919
Nance, Geo. B., Monroe, Jeff. Med. Coll., 1885	1885	1904
Neal, John W., Monroe, N. Y. Univ. Med. Coll., 1884	1887	1904
Perkins, David R., Marshville, Balt. Med. Coll., 1903	1906	1907
Pruitt, G. C., Monroe, Atlanta Med. Coll., 1911	1911	1920
Richardson, Jas. C., Monroe, Vanderbilt Univ., 1920	1920	1923

Name and Address	*Licensed*	*Joined State Society*
Smith, G. M., Monroe, N. C. Med. Coll., 1914	1914	1919
Stevens, S. A., Monroe, Univ. of Md., 1898	1898	1898
Stewart, H. D., Monroe, Univ. of Md., 1898	1898	1904
Whitley, A. D. N., Unionville, Univ. of Md., 1897	1897	1904
Williams, Edward J., Monroe, Univ. of N. Y., 1917	1921	1921

VANCE COUNTY SOCIETY

President,	----	----
Secretary, J. H. Wheeler, Henderson, Jeff. Med. Coll., 1918	1918	1920
Allen, Benjamin G., Henderson, Bellevue Med. Coll., 1904	1904	1908
Bass., H. H., Henderson, Univ. of Md., 1899	1899	1900
Cheatham, Goode, Henderson, N. C. Med. Coll., 1895	1895	1920
Fenner, Edwin F., Henderson, Univ. of Md., 1905	1906	1908
Gill, Robt. J., Henderson, Univ. of Pa., 1880	1880	1890
Harris, Fletcher R., Henderson (Hon.), Univ. of Va., 1881	1883	1883
McIntosh, L. C., Henderson, Atlanta Coll. of P. and S., 1913	1914	1914
Newell, H. A., Henderson, P. and S., Baltimore, 1906	1906	1907
Upchurch, Robt. T., Henderson, Jeff. Med. Coll., 1908	1908	1910

WAKE COUNTY SOCIETY

President, Hubert B. Haywood, Jr., Raleigh, Univ. of Pa., 1909	1909	1910
Secretary, B. J. Lawrence, Raleigh, Jefferson Med. Coll., 1919	1919	1920
Abernathy, C. O., Raleigh, Univ. of N. C., 1906	1906	1907
Adams, R. K., Raleigh, Jeff. Med. Coll., 1912	1912	1916
Anderson, Albert, Raleigh (Hon.), Univ. of Va., 1888	1888	1890
Ashby, J. M., Raleigh, Univ. of Md., 1905	1921	1922
Barbee, G. S., Zebulon, Univ. of N. C., 1910	1910	1912
Beath, Thos., Raleigh, Toronto Univ., 1891	1920	1921
Bell, Carl W., Raleigh, Coll. of P. and S., Balt., 1914	1915	1916
Blalock, N. M., McCullers, P. and S., Balt., 1890	1890	1904
Bonner, H. M., Raleigh, Med. Coll. of Va., 1897	1897	1918
Broughton, N. B., Raleigh, Univ. of Pa., 1919	1920	1921
Buchanan, L. T., Raleigh, Jeff. Med. Coll., 1913	1915	1917
Buffaloe, J. S., Garner, Balt. Med. Coll., 1900	1900	1904
Bulla, A. C., Raleigh, N. C. Med. Coll., 1915	1915	1918
Burt, Benj. W., Holly Springs, P. and S., Balt., 1886	1886	1904
Campbell, Alton C., Raleigh, Univ. of N. C., 1910	1910	1912
Carroll, E. D., Dixon, Raleigh, Woman's Med. Coll., 1895	1900	1900
Caveness, Z. M., Raleigh, Univ. of N. C., 1903	1903	1903
Cheek, C. E., Fuquay Springs, Univ. Coll. of Med., Va., 1912	1912	1914
Cooper, G. M., Raleigh, Univ. Coll. of Med., Richmond, 1905	1905	1906
Cozart, W. S., Holly Springs, Med. Coll. of Va., 1914	1914	1917
Dewar, Wm. B., Raleigh, Univ. of Pa., 1920	1920	1923
Edwards, C. J., Raleigh, Med. Coll. of Va., 1917	1921	1923
Finch, O. E., Apex, Jeff. Med. Coll., 1915	1915	1917
Flowers, Clarence A., Wendell, P. and S., Baltimore, 1905	1907	1910
Flowers, C. E., Zebulon, Med. Coll. of Va., 1913	1915	1916
Fowler, M. L., Zebulon, Coll. of P. and S., Balt., 1881	1885	1904
Freeman, R. H., Raleigh, Jeff. Med. Coll., 1908	1908	1919

Name and Address	*Licensed*	*Joined State Society*
Gibson, M. R., Raleigh, Univ. of N. C., 1905	1905	1914
Goodwin, A. W., Raleigh (Hon.), Bellevue Med. Coll., 1887	1887	1887
Haywood, Hubert, Raleigh (Hon.), Bellevue Med. Coll., 1879	1879	1879
Haywood, F. J., Raleigh (Hon.), Bellevue Med. Coll., 1868	----	1871
Hester, Jos. R., Knightdale, Univ. of N. C., 1910	1910	1912
Hicks, V. M., Raleigh, Jeff. Med. Coll., 1918	1918	1921
Horton, M. C., Raleigh, Univ. Coll. of Med., Va., 1903	1911	1911
Horton, W. C., Raleigh, P. and S., Balt., 1897	1896	1904
Hunter, J. P., Cary, Jeff. Med. Coll., 1919	1919	1921
Jenkins, Chas. L., Raleigh, N. Y. Univ. Med. Coll., 1890	1890	1894
Johnson, Robt. W., Apex, Univ. of Tenn., 1900	1901	1904
Jones, Carey C., Apex, Jeff. Med. Coll., 1921	1921	1923
Jordon, Thos. M., Raleigh (Hon.), P. and S., Balt., 1881	1881	1882
Judd, Eugene C., Raleigh, Univ. of Pa., 1911	1911	1912
Judd, Jas. M., Varina, Balt. Med. Coll., 1897	1899	1901
Kitchen, T. D., Wake Forest, Jeff. Med. Coll., 1908	1908	1908
Knox, Augustus W., Raleigh (Hon.), Bellevue Med. Coll., 1874	1878	1880
Lewis, Richard H., Raleigh (Hon.), Univ. of Md., 1877	1877	1877
Lewis, S. V., Wendell, Med. Coll. of Va., 1916	1916	1923
Long, E. F., Raleigh, Med. Coll. of Va., 1909	1909	1912
Lowery, John R., Raleigh, Univ. of Md., 1904	1904	1913
McDowell, F. C., Zebulon, Univ. of Pa., 1902	1913	1916
McGeachy, R. S., Raleigh, Bellevue Hospital, 1894	1894	1895
MeGee, Jas. Wm., Raleigh (Hon.), Bellevue Med. Coll., 1888	1888	1888
MeKee, John S., Raleigh, Univ. of Md., 1907	1908	1909
Mitchell, R. C., Raleigh, Univ. of Pa., 1919	1920	1923
Neal, Kemp P., Raleigh, Harvard, 1917	1920	1921
Neal, Paul N., Raleigh, Harvard, 1919	1920	1921
Noble, R. P., Raleigh, Univ. of N. C., 1907	1907	1916
Norman, J. H., Raleigh, Tulane University, 1905	1905	1923
Phillips, J. J., Raleigh, Columbia Univ. P. and S., N. Y., 1894	1905	1907
Proctor, I. M., Raleigh, Univ. of N. C., 1913, Univ. of Pa., 1915	1915	1917
Rankin, Watson S., Raleigh, Univ. of Md., 1901	1901	1901
Ray, O. L., R. 1, Raleigh, Univ. Coll. of Med., Va., 1899	1899	1904
Register, F. M., Raleigh, Ky. Sch. of Med., 1893	1891	1918
Riggsbee, A. E., Morrisville, Univ. of N. C., 1909	1909	1911
Rogers, Jas. Rufus, Raleigh, P. and S., Baltimore, 1886	1886	1904
Root, Aldert S., Raleigh, Univ. of Pa., 1911	1911	1913
Royster, Hubert A., Raleigh, Univ. of Pa., 1894	1894	1895
Royster, W. I., Raleigh (Hon.), Bellevue, N. Y., 1869	1869	1874
Shore, C. A., Raleigh, Johns Hopkins, 1907	1909	1909
Small, Victor R., Raleigh, Ohio Univ. Med. Coll., 1916	1920	1921
Stancill, Wm. W., Raleigh, Univ. Coll. of Med., Va., 1906	1906	1914
Strickland, W. M., Wendell, Med. Coll. of Va., 1919	1919	1923
Templeton, Jas. M., Cary, Baltimore Med. Coll., 1882	1882	1893
Thompson, Hugh A., Raleigh, Univ. of Pa., 1914	1914	1917
Thompson, S. W., Wake Forest, Med. Coll. of Va., 1875	----	1904
Vann, H. M., Wake Forest, Jeff. Med. Coll., 1917	1917	1923
Waring, E. S., Raleigh, Harvard, 1918	1922	1923

Name and Address	Licensed	Joined State Society
Washburn, B. E., Kingston, Jamica, Univ. of Va., 1911	1912	1917
Watson, John B., Raleigh, Univ. of N. C., 1908	1908	1909
West, Louis N., Raleigh, Jeff. Med. Coll., 1912	1912	1915
Wilkerson, Chas. B., Raleigh, Univ. of N. C., 1906	1906	1908
Wilkerson, T. E., Jr., Raleigh, Univ. of Pa., 1914	1914	1916
Wright, J. B., Raleigh, Univ. Coll. of Med., Va., 1899	1899	1900
Young, L. B., R. 3, Wake Forest, P. and S., Baltimore, 1886	1886	1906

WARREN COUNTY SOCIETY

President, C. H. Peete, Warrenton, Univ. of Pa., 1903	1906	1911
Secretary, H. H. Foster, Norlina, Jeff. Med. Coll., 1919	1919	1923
Holt, T. J., Warrenton, Med. Coll. of Va., 1904	1904	1911
Macon, G. H., Warrenton, Univ. Coll. of Med., Va., 1910	1910	1911
Packard, F. S., Norlina, Bowdoin Med. Sch., Me., 1887	1907	1922
Perry, Mark P., Macon (Hon.), P. and S., Balt., 1884	1884	1884
Rodgers, W. D., Jr., Warrenton, Jeff. Med. Coll., 1913	1913	1915

WASHINGTON-TYRELL COUNTY SOCIETY

President, John W. Speight, Roper, Ky. School of Med., 1885	1885	1904
Secretary, T. L. Bray, Plymouth, Univ. of Md., 1916	1916	1920
Halsey, Benj. F., Roper, Vanderbilt Univ., 1893	1894	1894
Hardison, Wm. H., Creswell, Washington Univ. of Md., 1870	1871	1890
Hassell, Jas. L., Creswell, Coll. of P. and S., Balt., 1886	1886	1904
McGowan, Claudius, Plymouth, Med. Coll. of Va., 1917	1917	1922
Mariner, N. B., Belhaven, Univ. Coll. of Med., Va., 1903	1903	1903
Spruill, Jos. L., Sanatorium (Columbia), Univ. of Md., 1895	1895	1907
Ward, Wm. H., Plymouth (Hon.), Univ. of Md., 1881	1886	1886

WAYNE COUNTY SOCIETY

President, Henderson Irwin, Goldsboro, Univ. of Md., 1912	1914	1916
Secretary, W. H. House, Goldsboro, Jeff. Med. Coll., 1915	1915	1922
Cobb, Wm. H., Jr., Goldsboro, Jeff. Med. Coll., 1889	1889	1890
Crawford, W. B., Goldsboro, Bellevue Hospital, 1886	1886	1904
Daniels, O. C., Goldsboro, Med. Coll. of Va., 1903	1903	1916
Ellington, A. J., Goldsboro, Columbia Univ., 1915	1915	1917
Faison, Wm. W., Goldsboro (Hon.), Jeff. Med. Coll., 1878	1883	1883
Ginn, Theo. L., Goldsboro, Med. Coll. of Va., 1901	1901	1904
Henderson, C. C., Mt. Olive, Univ. of Md., 1914	1914	1919
Henderson, T. B., Goldsboro, Med. Coll. of Va., 1906	1914	1915
Ivey, H. B., Goldsboro, Univ. Coll. of Med., Richmond, 1911	1911	1917
Jones, Clara E., Goldsboro, Woman's Med. Coll. of Pa., 1894	1894	1897
Lassiter, C. L., Fremont, Jeff. Med. Coll., 1915	1915	1918
Linville, W. C., Goldsboro, Univ. of Md., 1901	1901	1923
Miller, Robt. B., Goldsboro, Med. Coll. of Va., 1898	1900	1902
Moore, J. E., Mt. Olive, Tenn. Med. Coll., 1900	1898	1918
Morris, Geo. B., Mt. Olive, Univ. of Md., 1910	1910	1912
Parker, S. F., Mt. Olive, Med. Coll. of Va., 1901	1918	1922

Name and Address	*Licensed*	*Joined State Society*
Patrick, J. E., Seven Springs, Univ. Coll. of Med., Va., 1900	1900	1917
Person, Edgar C., Pikeville, Med. Coll. of Va., 1904	1904	1908
Person, H. M., Goldsboro, N. C. Med. Coll., 1913	1913	1916
Smith, R. A., Goldsboro (Hon.), Vanderbilt Univ., 1879	1882	1887
Smith, Wm. H., Goldsboro, Univ. of Pa., 1906	1907	1912
Spicer, John, Goldsboro, Bellevue Med. Coll., 1889	1890	1904
Spicer, Richard W., Goldsboro, N. C. Med. Coll., 1910, and Univ. of Pa., 1911	1910	1916
Spicer, Wm., Goldsboro, Bellevue Hosp. Med. Coll., N. Y., 1898	1898	1904
Strosnider, Chas. F., Goldsboro, Univ. of Md., 1909	1910	1913
Sutton, Wm. G., Seven Springs, Jeff. Med. Coll., 1889	1889	1896
Teague, S. E., Goldsboro, Tulane Univ., 1921	1921	1923
Whelpley, F. L., Goldsboro, Washington Univ., St. Louis, 1902	1918	1918
Wilkins, J. W., Mt. Olive, Med. Coll. of Va., 1913	1913	1917
Woodard, A. G., Goldsboro, N. C. Med. Coll., 1907	1907	1909

WILKES COUNTY SOCIETY

President, J. M. Turner, N. Wilkesboro, Univ. of Louisville, 1881	1885	1896
Secretary, F. H. Gilreath, N. Wilkesboro, Univ. of Nash., 1898	1898	1898
Duncan, Julian E., N. Wilkesboro, Univ. Coll. of Med., Va., 1907	1907	1908
Eller, A. J., Readybranch, P. and S., Balt., 1893	1895	1898
Gambill, I. S., N. Wilkesboro, N. C. Med. Coll., 1912	1912	1917
Hutchins, E. M., N. Wilkesboro, N. C. Med. Coll., 1896	1896	1904
Sink, C. S., N. Wilkesboro, N. C. Med. Coll., 1912	1912	1913
Somers, L. P., New Castle, Univ. of Md., 1897	1889	1904
Triplett, W. R., Purlear, N. C. Med. Coll., 1914	1915	1920
White, John W., Wilkesboro (Hon.), Jeff. Med. Coll., 1889	1889	1890

WILSON COUNTY SOCIETY

President, B. S. Herring, Wilson, Univ. of Michigan, 1900	1901	1901
Secretary, G. E. Bell, Wilson, Jefferson Med. Coll., 1921	1921	1922
Anderson, Wade H., Wilson, Univ. of Va., 1902	1904	1904
Anderson, Wm. S., Wilson, Washington Univ., Balt., 1868	1880	1900
Barnes, Benjamin F., Elm City, Univ. of Md., 1902	1902	1902
Best, Henry B., Wilson, Univ. of N. C., 1907	1907	1908
Brooks, G. M., Elm City, Jeff. Med. Coll., 1918	1919	1919
Dickinson, E. T., Wilson, Med. Coll. of Va., 1895	1895	1900
Eagles, Chas. S., Stantonsburg, Univ. of N. C., 1909	1909	1910
Grady, Leland V., R. 2, Wilson, N. C. Med. Coll., 1913	1913	1914
Hackney, Ben. H., Lucama, Tulane Univ., 1911	1911	1913
Hoover, H. R., Black Creek, Balt. Med. Coll., 1891	1892	1904
Johnston, R. H., Wilson, Univ. of Md., 1894	----	1919
Lamm, Isaac W., Lucama, Univ. Coll. of Med., Va., 1899	1899	1900
Lane, P. P., Wilson, Univ. of Md., 1908	1908	1920
Lewis, Geo. W., Wilson, Univ. of Md., 1886	1885	1894
McClees, Ed. C., Elm City, Med. Coll. of Va., 1917	1920	1920
Mitchell, Geo. W., Wilson, Univ. Coll. of Med., Va., 1913	1913	1920
Moore, Chas. E., Wilson (Hon.), Bellevue Med. Coll., 1875	1875	1875

Name and Address	*Licensed*	*Joined State Society*
Moore, Edwin G., Elm City (Hon.), Univ. of Md., 1883	1883	1890
Moore, K. C., Wilson, Univ. of Michigan, 1909	1909	1910
Person, T. E., Stantonsburg, N. C. Med. Coll., 1911	1911	1914
Powell, H. H., Stantonsburg, N. C. Med. Coll., 1911	1911	1914
Putney, R. H., Elm City, Med. Coll. of Va., 1914	1914	1920
Saliba, Michael M., Wilson, Balt. Med. Coll., 1897	1910	1910
Smith, A. Jones, Black Creek, Univ. of Pa., 1921	1921	1923
Smith, L. J., Wilson, Jeff. Med. Coll., 1912	1918	1918
Stevens, M. L., Elm City, Balt. Med. Coll., 1891	1892	1893
Strickland, E. L., Wilson, Med. Coll. of Va., 1916	1916	1917
Williams, Alfred F., Wilson, Univ. of Md., 1901	1901	1904
Woodard, C. A., Wilson, Univ. of Va., 1904	1904	1920

YADKIN COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Couch, V. F., Yadkinville, Columbia Univ., 1910	1910	1919
Leak, Wharton G., East Bend, N. C. Med. Coll., 1900	1899	1904
Martin, Richard E., East Bend, Univ. of N. C., 1912	1912	1922

YANCEY COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Peck, W. A., Ramseytown	1906	1919

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TRANSACTIONS

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

THIRTEENTH ANNUAL SESSION

ASHEVILLE, N. C.

MONDAY, APRIL 16, 1923

NORTH CAROLINA
PUBLIC HEALTH ASSOCIATION

THIRTEENTH ANNUAL SESSION

Asheville, Monday, April 16, 1923

officers, 1922-1923

Dr. A. C. Bulla, President, Raleigh.
Dr. C. W. Armstrong, Vice-President, Salisbury.
Dr. F. M. Register, Secretary, Raleigh.

PROGRAM

9:45 A. M.—1 P. M.

1. Call to order by the President.
2. Prayer: Reverend Willis G. Clarke, Asheville.
3. President's Annual Address: A. C. Bulla, M.D., Raleigh.
4. Report of Secretary: F. M. Register, M.D., Raleigh.
5. Report of Special Committees.
6. Appointment of
   (a) Committee on President's Address.
   (b) Committee on Visitors and New Members.
   (c) Committee on Resolutions.
   (d) Other Committees.
7. The Health Officer's Golden Rule—R. S. McGeachy, M.D., Kinston.
   Discussion by Roy C. Mitchell, M.D., Raleigh.
8. The Sanitary Privy in Disease Prevention—A. J. Ellington, M.D., Goldsboro.
   Discussion by D. R. Perry, M.D., Lexington.
9. The Importance of Tonsil and Adenoid Operation on Children, with Proposed Plans for Getting it Done—J. R. McCracken, M.D., Waynesville.
   Discussion by J. B. Greene, M.D., Asheville.
10. Malaria in Eastern North Carolina—H. A. Taylor, M.D., New Bern.
    Discussion by J. H. Hamilton, M.D., Wilmington.

2:45 P. M.—5 P. M.

1. The County Tuberculosis Problem—How Best Handled—Wm. M. Jones, M.D., Greensboro.

   Discussion by Carl V. Reynolds, M.D., Asheville.

2. Administration of Vaccine Among Rural School Children—P. C. Carter, M.D., Weldon.

3. Mental Hygiene—Albert Anderson, M.D.., Raleigh.
Discussion by John McCampbell, M.D., Morganton.

7:45 P. M.—10 P. M.

1. The Aims and Purposes of Maternity and Infancy Work in North Carolina—K. P. B. Bonner, M.D., Raleigh.
Discussion by M. L. Ilsley, M.D., Asheville.

2. Address—Cyrus Thompson, M.D., Jacksonville.

3. Adoption of Resolutions.

5. Adjournment.

TRANSACTIONS

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

THIRTEENTH ANNUAL SESSION

MONDAY, APRIL 16, 10 A. M.

The meeting was called to order by the President, Dr. A. C. Bulla, Raleigh.

Invocation by the Reverend Willis G. Clarke, of Asheville, Rector of Trinity Episcopal Church.

PRESIDENT'S ADDRESS

THE PROFIT AND LOSS ACCOUNT OF PUBLIC HEALTH IN NORTH CAROLINA

A. C. BULLA, M.D., Raleigh

My first duty is to repeat my thanks, which I fear were but poorly expressed at the time I was elected in Winston-Salem as president of the North Carolina Public Health Association.

It is particularly interesting to me to preside at this meeting, for it was here that I attended my first Health Officers' Association and earned my first dollar after being admitted to the Medical Society of the State of North Carolina.

There is no state in all these United States which has made more progress in public health work in recent years than North Carolina, but her progress and profit have been attended by loss, which must be considered in balancing the account.

Providence has so placed this State that her people enjoy the best climate in the world. We escape the rigors of severe cold and are free from the oppression that prolonged intense heat visits upon mind and body. Our soil and seasons, the temperature and distribution of rainfall, enables us to grow every important crop grown in the United States. In natural water power we lead all other states east of the Mississippi, excepting only New York with its Niagara. The State would never be able to forge ahead as she has without the rivers tumbling down from the heights of the Appalachian and the Blue Ridge, in whose bosom we are gathered today. Here is power, wealth and profit inexhaustible, because it comes from the skies.

This State of ours manufactures more than a billion dollars' worth of products annually, and is classed as a billion dollar State,

only 14 ranking above her. Her power in agriculture (fifth from the top), her bravery in the war, excelled by none, in manufacturing, in wealth, in public health, in good roads, in progress of education, in 99.5 per cent pure Anglo-Saxon blood, make her, in many respects, the greatest State in the Union. She is growing great and rich and overshadows all other states in progress and prosperity.

Today we find Virginia, South Carolina, Tennessee and Georgia newspapers asking why North Carolina goes ahead so much faster than her Southern sisters in health work, education, in good roads and industrial development. The answer is easy. In the first ten months of 1922, communities voted $11,000.000 for school buildings, more than Virginia, South Carolina, Georgia, Alabama and Tennessee combined, and today her school property is valued at $35,500,000. In the last two years the State has issued $65,000,000 of bonds, an outlay for good road work equal to all money appropriated for the same purpose for the Southern States south of the Potomac and east of the Mississippi.

I mention these things because of the relation between the State's wealth, her banking account, and how she is going to care for her feeble-minded, her crippled, her deaf and dumb, her delinquents, and that great army of bright-faced children suffering with defects which, if neglected, will retard them physically and mentally in their march to success. The State will lose and her loss will be heavy. They must be considered in balancing the account of profit and loss.

With a population in 1920 of 2,559,123, scattered over an area of 48,740 square miles, with an average of only 52.5 people to the square mile—with only 55 cities and towns of more than 2,500, and only four of these with more than 25,000 inhabitants, and none above 50,000—with a rural population of approximately 2,000,000 people, this State is an ideal place for people to live and to live out their full days of expectancy with as little sickness and suffering as anywhere in the world.

Of the 100 counties, 28 have whole-time health officers, about one-third of the area of the State and a little less than one-half of the population. These counties with health officers last year invested more than $200,000 in public health work; examined 95,000 children for physical defects; treated 14,500 for dental defects; 2,600 for tonsil-adenoid operations; vaccinated 13,500 against diphtheria, 23,600 against smallpox and 57 against typhoid fever; approved more than 15,000 urban and rural privies as sanitary. These progressive counties are making investments more lasting than their rocks and hills and which will pay a profit until the end of time. But all the health work of the State is not being done by the 28 counties with whole-time health officers. Let us turn to the other 72 counties, in which the State Board of Health has been operating through its several bureaus. With a corps of nurses, dentists, specialists and field workers, 86,155 children were examined for physical de-

fects, 29 tonsil-adenoid clinics were held, 2,488 children successfully operated on and 32,382 treated for dental defects. 73,692 persons were vaccinated against typhoid fever and 19,140 against diphtheria. 4,379 persons were examined in 30 veneral clinics, in the same number of counties, and 841 found infected, or about 19 per cent. 60,400 privies were approved as sanitary. Water and sewerage systems for seven towns with a population of more than 10,000 have been approved. More than 1,600,000 pieces of literature were mailed from one bureau to the 6,583 prenatal cases and the 12,523 babies registered. These are just a few of the things done in counties with whole-time health officers and those without

In the not far distance, in our swift onward progress, we shall see a whole-time health officer in every county in the State, county hospitals, or a hospital in a group of counties, and a medical college. We shall see all births attended by physicians, as they should be; we shall see cancer and cardiorenal diseases, which are now on the increase, begin to decline; we shall see the 400,000 persons infected with malaria and hookworms diminish to a few hundred, and a much larger number of the State's population, suffering with impairments of varying degrees, gradually get under treatment.

We shall see the 63,500 white and about the same number of colored tenants and croppers begin to rise into farm owners. The 1,380,000 landless souls will seek homes on the 100,00 vacant lots and the 22,000,000 idle acres of farm land. They will gather unto themselves what Soloman called wisdom and understanding and apply it to farm production, farm co-operative marketing and farm wealth in general; realizing that civilization is rooted and grounded in home-owning, home-loving and home-depending interests.

When the Farm Tenancy Commission has compiled its statistics of the field studies of farm tenancy in three typical farm territories we shall have some facts and figures which will give the average public health worker a new conception of the needs of rural health work. More should be known about the tenant as a human being—his home life, his church and school interests, his habits and hopes, and the part he has played in lifting or lowering the level of civilization in his home and community. He must be appraised as a home-maker and as a community builder; he must be reckoned with in balancing the account of profit and loss to the state.

In all public health work we must take into account the fact that any single phase of child life must be treated in its relation to all other phases. We must give a new meaning and vitality to all measures that will assure children of their best potential maturity, such as better preparation for parenthood, prenatal care, prevention of infant mortality, malnutrition and disease. Education of a kind which the ignorant will not be skeptical about, medical examination and physical education of children, better homes and economic forces affecting the home. Herein lies the greatest

profit to the State and the sooner all counties realize that a well organized health department, functioning properly and free from political influences, will pay larger profits on the money invested than any other business they can engage in.

If all the mothers had an adequate knowledge of what constitutes proper feeding, clothing, sleep, exercise and other care of their children in the months and first years following birth we would see the infant mortality rate in a comparatively short time reduced 50 per cent. But as long as such knowledge is lacking the State will continue to lose, and the loss, for years to come, will have to be taken into account.

There are in this State 900,000—nearly 1,000,000—boys and girls enrolled in the public schools. This large plastic population is being taught by 20,000 teachers, who are molding them into form, suitable for service as citizens of tomorrow.

Grier has said, "The broadened teacher sees in her pupils so many roughly molded images of a composition ranging from commonest clay to the finest of marbles. While she may not with impunity endeaver to change their fundamental lines, she may soften them, and this period of polishing and repairing the cracks, found through enlightenment to be economical, is termed education. The ideals with which she fashions her work may be only the average of those of the time, but the interpretation of them, wherein lies the handicraft of the teacher, is that from which humanity at large gathers the significance of the ultimate image." Teachers should be trained in public health and how to teach the simple rules of hygiene and right living, just as they are trained to teach other subjects. A knowledge of the fundamental rules which are essential to good health is all important. If health work in the school is to be made practical and effective, it must be given its place in the school program. It must receive the same regular scientific and pedagogical consideration that any other subject receives which is placed in the curriculum. The children should look upon the health instruction with the same consideration that they regard other subjects. They should understand that they are to have a health examination and should be successful in passing this as any other examination. The children should be impressed with the thought that it is just as unfortunate to fail in their health examination, or to be below par in their health ratings, as it is to fail in any other subject or to be below the standard prescribed for successful work in that subject.

In the State's school population is stored up its greatest asset —potential health and wealth wherein lies a profit which can not be estimated. If this potential health and wealth is not taught by trained teachers, given proper guidance and treatment, if it is not given an opportunity to grow in knowledge and power, the profit will be attended by loss which will be figured into the account for years to come.

The profit and loss account of public health in this State can never be balanced until that class of white and colored women,

who because they are too old or decrepit to be useful in other occupations, numbering 6,000, are prohibited from practicing midwifery. Of these 6,000 women, 2,500 are registered with the State Board of Health, and the records show that they are illiterate, ignorant, most of them. Notwithstanding this fact they attend one-third of all white and colored births in the State. More than 30,500 mothers look to this woman for service when they need the attention of the most skilled physician. One of the best public health thinkers in this country has said, "These mothers pass through the valley of the shadow of death with no ray of light or science to dispel its gloom, and with only the flickering candle of the mid-wife to guide them through their travail."

With the medical profession of the State numbering 2,300, if each physician were to attend one and one-tenth more births each month, it would at once bring to an end a loss which the State has suffered from its earliest history. And no longer would the medical profession have trailing along with it 6,000 so-classed professional mid-wives.

If they cannot be eliminated their meager knowledge of their work should be improved, but with improved knowledge they gain prestige and this is used to further their work, but let us trust that their knowledge will be greater than their prestige.

There are towns, cities and counties in this State which have ample medical service to attend all births, and where I believe the profession is willing to assume the responsibility. In such instances the city and county boards of health should make the practice of mid-wifery unlawful and give the physicians opportunity to take the responsibility.

In balancing the profit and loss we must take into consideration contagious and infectious diseases. Last year there were reported 37,238 cases, which represent about two-thirds of all cases occuring in the State; of this number there were 8,136 cases of diphtheria and 365 deaths, one for each day; 1,960 cases of typhoid fever and 307 deaths; 1,409 cases of smallpox and 21 deaths. The loss to the State on account of these diseases is because the people did not avail themselves of the preventive measures offered by medical science.

If I were an artist I would paint a picture of a great raging battle. A battle that is grim and real, one that has been raging since the dawn of civilization. I would place on one side of this picture hundreds of ugly and hideous monsters, mankind's most dreaded and dangerous enemies. I would call this foe "Disease", a vast army seeking to destroy men, innocent women and children; an army that has had a continuous march since the beginning of time, and that has left in its trail nothing but death, the maimed and crippled, the blind and the deaf; crying and broken-hearted mothers.

I would place on the other side, standing between North Carolina's humanity, another army composed of scientists, doctors and surgeons battling to stay these hideous monsters, that health

and happiness might prevail instead of misery and destruction. This vast army I would call "Science."

There would be a long row of repulsive carcasses that have been attacked and killed by these foes, yellow fever, typhus fever, bubonic plague and others. There would lie within our borders a great giant, not dead, but dying, pierced by the sword of science. His name is Typhoid Fever. No more will he disturb or trouble the human race as he has in the past. Before he was wounded by Wright he killed thousands of our population in one year, but now he kills only a few hundred and is struggling for his last victim.

There is another. His name is Diphtheria, the terror of all mothers, not dead but dying, pierced by the sword of science. We should fear it no more with antitoxin, which is a specific cure when used early and in large doses, and with the Schick test to reveal the susceptible subjects and toxin-antitoxin to immunize them.

There is another; his name is Smallpox. This one time monstrous giant, pierced by the sword of Jenner more than 125 years ago, still raises its head to trouble the peaceful population of the State and kills human beings.

And so it is with malaria. Our scientists in Panama and Cuba and other places conquered this only by exposing themselves to its dangerous poison, several dying in the attempt, but left us means by which it will become a thing of the past and unknown.

In the past these and other like diseases have been held up before the public as evidences of what can be accomplished in public health work. They have stimulated inactive health boards to activity. They have guided health workers into larger and broader fields; and today medical men and public health workers are beginning to realize that with the warfare against such maladies well organized, it is now time to give attention to the heavy loss from lowered physical efficiency and chronic preventable diseases, a loss which at the present time exceeds in magnitude that sustained from acute and more widely feared communicable diseases.

The people, the mass, must be educated. They must have knowledge of health, knowledge of the cause and channels of disease, both communicable diseases and those arising from neglect of their bodies. As knowledge grows we become aware of the immeasurable part played by ignorance in the realm of disease. Truly, the field is ripe unto the harvest, but the laborers are few.

We may not definitely prevent all of the preventable diseases now known to the medical science, but we should undertake with courage and determination the great task which this age and civilization impose upon us, with enlarged vision and deeper aspiration for the accomplishments of a work that will be significant, not simply from the standpoint of the present generation but from the

standpoint of all future generations. It is true that other and better men have gone before us and we enter into their labors, as other and better men will follow us and enter into ours. But our responsibility is none the less sure. Knowledge, clearness of mind, broad vision, strength of will and sympathy of heart have been in the past, and they will be in the future, the inspiration of all high human endeavor.

REPORT OF SECRETARY FOR THE YEAR ENDING APRIL 1, 1923

I wish to take this opportunity to thank Dr. L. B. McBrayer, Secretary of the Medical Society of the State of North Carolina, for printing the transactions of our last meeting along with the transactions of the Medical Society, for furnishing reporter for this meeting and printing our program, and for the splendid letter of instruction he sent each member present. He kindly furnished me with several hundred letters which were sent out from my office to those who registered last year and to all those whose names appear on our program for today.

The twelfth annual session of this Association was held in Winston-Salem, Monday, April 24, 1922, and was opened with an address by President, Dr. L. J. Smith.

The following committees were appointed:

Committee on President's Address:

Dr. C. W. Armstrong
Dr. W. A. McPhaul
Dr. R. L. Carlton

Committee on Visitors and New Members:

Dr. R. L. Carlton
Dr. A. C. Bulla
Dr. J. H. Hamilton

Committee on Resolutions:

Dr. K. E. Miller
Dr. N. B. Adams
Dr. P. P. McCain

The following officers were elected:

President: Dr. A. C. Bulla
Vice-President: Dr. C. W. Armstrong
Secretary: Dr. F. M. Register

You have no doubt noticed that our program this year is a little shorter than heretofore. This was done in order that we might have more time for discussion of the splendid papers we shall hear in our meeting today.

F. M. Register, M.D.

The following were appointed as a Committee on the Presi-

dent's Address: Dr. R. L. Carlton, Winston-Salem; Dr.. E. T. Hollingsworth, Clinton; Dr. J. A. Morris, Oxford.

The following committees were appointed by the President:

Committee on Visitors and New Members: Dr. C. N. Sisk, Winston-Salem; Dr. P. C. Carter, Weldon; Dr. L. L. Williams, Mount Airy.

Committee on Resolutions: Dr. R. S. McGeachy, Kinston; Dr. J. E. Smith, Windsor; Dr. D. R. Perry, Lexington.

THE HEALTH OFFICER'S GOLDEN RULE

R. S. McGeachy, M.D., Kinston

My ideal relation between the health officer and the general practitioner would be one so intimate that the general practitioner would look upon the health department and health officer as indispensable and invaluable agencies in the furtherance of his work. Just how to perfect such an ideal relation will take a far smarter man than I am to tell you, but I do hope to enumerate a few rules that I think we should rigidly adhere to.

First. I think that we should strive to be of service to the general practitioner in our territory in every way possible. Just how to be of service will have to be worked out by the individual health officer. Those of us who are conducting clinics of any kind should let the general practitioner know that we are catering only to that class of cases that they themselves do not wish to treat. If the health officer personally conducts the clinic, I do not know but that it would be a good idea to refuse to treat or examine anyone that is not referred in writing by a physician.

"Experience is a dear teacher" and I think that we should profit by the experience of our mistakes. I have little patience with the person that is constantly saying "I done it and I tole you so", but to make this paper any way effective, I feel that it is absolutely necessary to call attention to some of my mistakes and those of others. I feel that it is the height of imprudence for us to question in any way the diagnosis of any disease made on a report card. To illustrate: One of the most loyal supporters of the Health Department in my County reported a case of scarlet fever to one of my predecessors and he went to the house, examined the case and put up a measles placard without saying a word to the physician. A colored physician, whose cooperation with the Health Department is 100% perfect, reported to me three (3) cases of measles. Just previous to his reports several cases of scarlet fever had been discovered in this same neighborhood and I felt confident that these cases were also cases of scarlet fever, but without question I ordered measles cards displayed. On this physician's next visit his suspicions were aroused and he came to my office, as he often does, and asked me to go with him to see the cases. We were both sure after our examination that it was scarlet fever,

but as the ultimate results were practically the same, I told him that we would leave up the measles card. I now look upon this physician as one of my best friends in Kinston and I know that he is an ardent supporter of the Health Department.

Now for my mistakes. One day a nurse employed by one of our mills to do community work called the office and told the clerical assistance to tell me to go to several homes in her territory as soon as possible to see some children that were sick. She said that she thought it was scarlet fever, for she had seen all other eruptive diseases and it was not like anything she had ever seen. I think that the sanitary inspector must have sensed trouble, for he insisted on going with me, and when we visited the homes early in the night we found 11 cases of scarlet fever in 10 of them. Instead of using a little common sense and putting up scarlet fever cards at only those places where there had been no physician in attendance, I went like a fool and put up cards at every place where the nurse had diagnosed a case of scarlet fever and the next morning it got so hot for me that the sanitary inspector kindly informed me that I had some business in La Grange that day and it was rather late in the afternoon before he would allow me to return. As it turned out, one of the strongest opponents of the nurse's diagnosis finally decided it was genuine scarlet fever, but he would not say that I had acted right and I heartily agree with him. This experience gave me an opportunity to say what I had been itching to say for some time. I told the physicians at the next medical meeting that I wanted them to feel and know that I was ready night or day, rain or shine, to walk with them, if necessary, to any part of the County to see a case that they were not sure about, but to please never again put me in a position where I would have to investigate reports by outsiders.

I think as far as possible we should grant the requests of the general practitioner. Years ago I was attending a case of scarlet fever in Raleigh and the six weeks quarantine would have been out on Tuesday. On Saturday a circus was coming to town and the parents were very anxious to take the child to see the parade. These were good, conscientious people and as I had been seeing the case extra often, I knew that the child was perfectly well and told them I did not think there would be any trouble about her going. When I called up the Health Officer, he "went up in the air" and said "No, indeed, the child must stay in forty-two days and the circus comes on the thirty-ninth day". I knew then and I know now that the child was as well on the thirty-ninth day as she was on the forty-second.

One of the professors at Bellevue told us that while we were young in the profession and got a call to see a child, and Grandma was about, to be sure to find out if possible what she thought was the trouble and try not to be so "blamed" conscientious as not to agree with her diagnosis. I think we should try to agree with the general practitioner when he calls us to see a case with him, for he is more than apt to be right. One of the physicians of my

town told me once after a consultation that he did not mind telling me that it was a pleasure to confer with me, for I had not allowed my office to make a "darn" fool of me.

Another courtesy that is due the general practitioner is, I think, to positively refuse to remove a placard from a home until the physician in attendance says it may come down. Some months ago some of the physicians in my territory got to sending persons to me to give immunizing doses of antitoxin. I gave these doses as requested, but at our next medical society meeting I told the physicians that I was perfectly willing and glad to do this for them, but that I thought that it was work that should be paid for and I felt that they were due the pay. They all agreed with me and a motion was passed authorizing me to refuse to give it even on request by a physician, except as an act of personal favor to him.

I feel that we should be very careful how we advertise free vaccinations, etc. I am heartily in favor of the vaccination of everyone possible, but if the general practitioner can get a fee for vaccination I think it nothing but right that he should get it. I try not to publicly advertise free vaccinations outside of my office, except in public gatherings and in schools, and all reference to vaccination in the public press I urge the people to see their physician and be vaccinated. You may rest assured the people will find out you do it free and come to you for it.

I have always argued that the taxpayers are due some returns for their money and except for the protection their citizenship in any state or community guarantees them, I think that the people derive more returns through the health department than any other agency. I found a note on my desk one day soon after going to Kinston which read something like this: "Miss Blank prescribing for Dr. Doe's patients." Where this note came from I have never been able to discover, but it gave me an idea and I have directed all the nurses, when they enter a home, to ask first thing whether they have a physician or not, and if they have to urge the people to carry out the physician's directions to the letter and under no circumstances to give directions. The Sanitary Inspector has orders to always adhere to the "Golden Rule" in trying to enforce the requirements of the State Sanitary laws and if there was ever a more faithful, conscientious worker that the Sanitary Inspector of Lenoir county, I have not known him.

Last year in Winston-Salem was the first Public Health Convention that I had attended and some of you will remember how green and timid I was then, and I am just about as bad off now, but I can not close this paper without a little note of warning to the "powers that be" at headquarters and that is this, have the field representatives from headquarters apply the "Golden Rule" in all their work in the field. To illustrate, some months ago a Sanitary Inspector from headquarters reported for duty in my territory. In talking with him the first day, I mentioned what I thought was an important sanitary problem that the Sanitary Inspector and I

had tried to solve and asked him to help us out. He kindly informed me that that kind of work was not his business, so I apologized most humbly and refrained from making any more requests. About two days after that our Sanitary Inspector informed me that this man was about to publish a statement to the public. I asked him to let me see what he was going to publish and found that he had gone to the trouble of having typewritten a statement to the effect that there was not a privy in Lenoir County that would comply with the requirements of the State law and infomed the public that he had come to see that they were built. He gave the name of his boardinghouse and its telephone number and did not mention the Health Department. That rather hurt my pride and I told him, in a very few choice words, that he was not to publish any statement without my O. K. to it, etc. Just before this happened a representative from another department visited our field and after his departure the head of the department wrote and asked my opinion of his work. I answered frankly and received a lovely letter in reply to my letter of criticism, which showed me that headquarters is always anxious to work in harmony with the field and it is my opinion that by united effort and the application of the "Golden Rule", and only by these methods, can we hope to attain to any degree the sympathetic relation of all agencies that look to the increased happiness and usefulness of all mankind.

DISCUSSION

Dr. Roy C. Mitchell, Raleigh:

It is putting me in a rather embarrassing light to ask me to attempt to discuss a paper written by a man of Dr. McGeachy's experience, and a man who has as much charity to people of different points of view, as I have learned from working with him. I fear that my discussion of this paper will show a little less charity than he does.

The most embarrassing situation in which I was ever found in which I was called upon to apply the Golden Rule was in a home where I was staying for a few days. One of the children was a little indisposed, and I found it, to my mind, a typical case of a contagious disease. I told them to call the family physician. He did not recognize it as such, though there was no doubt as to the diagnosis. I did not know what to do. Fortunately, those people were conscientious, and carried out the regulations without having the case quarantined. The question is what to do when there are apparent conflicts between the policies of the State Board of Health and the private practitioner. It goes back to the old question of private medicine and State medicine. Personally, I am afraid of the Golden Rule. I am afraid to leave it to be interpreted by every man who comes into contact with it. Every individual has his individual standards. What common standard shall we go by?

During the last twenty-four hours I picked up this, out of the

Journal of the American Medical Association, a resolution which was passed on March twenty-fifth:

"We are opposed to State medicine in any form, medicine financed by federal, state, county, or city funds, except medicine practiced by the Army, the Navy, the United States Public Health Service, the control of contagious diseases, treatment of the indigent, and of mental diseases."

That, to my mind, is the Golden Rule in its best form. Our best medical ethics we consider those approved and recommended by the American Medical Association. It is the strongest body we have. Its standards are the highest we have. While we are not concerned with the Army, the Navy, and the Public Health Service, we are concerned with the control of communicable diseases. We have our State quarantine laws. There we find the question of the Golden Rule, whether they shall be rigidly applied, or not. There will be different circumstances in every community. There will be different views on the part of every doctor. We must solve these things according to our best individual judgment. The field of a public health man, the field in which he should remain, is that of regulating the control of communicable diseases, the treatment of mental diseases, and the treatment of indigent cases. Whenever a man goes over that and begins treating on an extensive plan patients able to pay, the private man has a right to object. The line where the private practitioner and the public health man should meet is that line drawn by the American Medical Association.

Dr. Wm. M. Jones, Greensboro:

I have been a general practitioner, and I want to say that Dr. McGeachy's paper is one of the best papers, and has more common sense in it than almost any other paper I have ever heard read before the Public Health Association. The way to get along harmoniously is to realize that the other fellow has just as much right to his opinion as we have, and that he is just as often right. In fact, to be honest, I think he is more often right. The general practitioners are men just like us. They are men, as a general rule, who will do what they think is right. I do not believe that they will try, except in very exceptional instances, to shield the patient or themselves, and to my mind Dr. McGeachy's method is certainly the way to get along with the general practitioner.

This business of treating people for one thing or another who are able to pay I am opposed to, and I do not do it—and most of them can pay. Too much for nothing makes paupers out of the people. If you advertise that you will do so-and-so for nothing, they will come the next time and ask for it, and the third time will come and demand it. The general practioner has to diagnose the cases, and he is just as good a diagnostician as the public health officer, better, as a rule. He sees the cases; we do not see all of them. Those cases we do see are generally typical

cases. If we go into the question of diagnosis with the physician, then decide to take it under suspicion, we generally placard the case. I tell the family when I make the diagnosis, and if it has to be changed I take the blame. I think the general practitioners of today are, as a rule, just as square and open and aboveboard, as they were when I was in general practice and I do not like to hear them spoken of disparagingly.

THE SANITARY PRIVY IN THE PREVENTION OF DISEASE

A. J. Ellington, M.D., Goldsboro

Let us first define the terms used in the subject of this paper. It is always well to understand just what we are dealing with. However, I do not promise to stick closely to this subject. At best it is an unsightly subject (or perhaps I should say an unsightly object). I have used the term Sanitary Privy herein to mean a practical, fool-proof toilet or privy—the essential features of which are as follows: A pit, vault, pail or tank for the reception of excreta until properly disposed of. This receptacle must be protected from flies and other carriers of disease germs. The lids be self closing, tightly fitted and durable. Unless a water proof receptacle is used, the location should be at a distance and down slope from the water supply. Economy of construction and ease of maintenance must be considered, if widespread installation with subsequent proper care is to be expected. Lastly, but very important, is the feature of comfort and convenience. If the privy is not comfortable and is located a long distance from the house, many abuses as well as non-use will occur.

To better understand the term "Sanitary Privy", let us consider its opposite and ask the question, "What constitutes an insanitary privy?" The question is well answered by Special Bulletin No. 178 of the State Board of Health, as follows: "It is best exemplified by the open surface privy, which is very commonly used in our State. In this type of privy, which is usually open in back from the seat to the ground, the excreta is deposited upon the surface of the ground, where it can be reached and scattered about by flies, birds, domestic fowls and animals, and with every rain may be washed into the open well or spring, or into the adjoining garden, where vegatables become contaminated with the human filth. It is little wonder, then, that we have typhoid fever, diarrhea and dysentary, when we eat vegatables contaminated with human filth, when our wells and springs are polluted with it, and when the food upon our tables is accessible to flies that were bred and bathed in the human excreta of our own family or of diseased neighbors. Therefore, the open surface privy, which violates every law of sanitation is a nefarious institution in any community, and must be entirely eliminated."

It is very strange, yet characteristic of human nature, that a great many people are utterly indifferent and refuse to accept re-

sponsibility in the protection of themselves and their communities. To educate and convince them to install sanitary toilet facilities, without recourse to the law, is a Herculean task. They dislike radical changes and abhor modern ideas or else make it convenient to plead poverty.

The open-back closet, the most popular type of unsanitary privy, is a dangerous and yet a time honored institution.

"When memory keeps me company and moves to smiles or tears,
A weather-beaten object looms through the mist of years.
Behind the house and barn it stood, a half mile or more,
And hurrying feet a path had made, straight to its swinging door.
Its architecture was a type of simple classic art,
But in the tragedy of life it played a leading part."

"We had our posey garden that the women loved so well,
I loved it, too, but better still I loved the stronger smell
That filled the evening breezes so full of homely cheer,
And told the night-o'ertaken tramp that human life was near."

"All day fat spiders spun their webs to catch the buzzing flies
That flitted to and from the house, where Ma was baking pies."

The entire poem by James Whitcomb Riley cannot be quoted here. Complete copies of this classic may be had upon application.

An exhaustive description of the varieties of sanitary toilets and privies cannot be given in the scope of this paper. Special Bulletins of the State Board of Health furnish very comprehensive details and specifications of the approved types. It is well, however, that the different types commonly in use be briefly mentioned with a few remarks based upon personal observation, and also the opinions of accepted authorities.

1. The Sewer System. This is the ideal arrangement and should be installed wherever possible.

2. The Septic Tank, embodying the L. R. S. principle of automatic bacteriacidal and liquefying action, is the nearest approach to the sewer system.

3. Chemical Toilets are very useful, and with proper care, are very satisfactory for installation in rural school buildings.

4. The Box and Can System is theoretically an ideal arrangement, but practically it is a failure. Overflowing and leaking cans, broken lids, careless scavenger service and the problem of ultimate disposal of "night soil", have caused many towns to abandon this system.

5. The Earth Pit Privy is the simplest, cheapest and, in rural communities, by far the most widely used of all the types of Sanitary Privies. Its prototype was originated by Moses and exten-

sively used by the Children of Israel (Deuteronomy, Chapter 23, verses 12 and 13). Moses, the Great Law Giver, realized the danger of soil pollution and enacted regulations to control the nuisance. The pit privy is fool-proof and easily maintained. In most places in North Carolina it may be used with safety. In low, wet localities its modification, the concrete vault, may be substituted.

Dr. I. J. Kligler, of the Rockefeller Institute, has recently completed two years of very interesting field observation and valuable experimental study of privies and polluted soil. He concludes that "in moderately compact clay, sand-clay, or sandy soil, free from cracks, the possibility of subsoil pollution of the ground-water is negligible, provided the ground-water level is more than 10 feet below the polluted area." He also found that typhoid bacilli survive in excrement under various conditions only 10 to 30 days and, further, that they spread neither laterally nor otherwise through the soil, unless carried mechanically by water. Soil tests showed that pollution may extend 5 feet from the pit and that the vertical distance between the bottom of the pit and the ground water is of greater significance than the horizontal distance between the pit and a well. Apparently, therefore, most pollution in wells, in soils above mentioned, is due to surface pollution.

In defining the second term of the subject "The Sanitary Privy in the prevention of Disease", it is well to state that my procedure will be to recall, briefly, a few important facts, known to most public health workers.

Recognizing the importance of sanitary toilets and privies in the prevention of disease, the State Legislature of 1919 enacted a law to prevent the spread of fecal borne diseases. This law states, in part, that every residence located within 300 yards of another residence shall be provided with a sanitary privy or toilet facilities, which shall meet certain requirements. The Bureau of Sanitation and Engineering of the State Board of Health is charged with the enforcement of this law and, already, much progress has been made.

The fight against fecal borne diseases has prevented innumerable cases of sickness and thousands of deaths from typhoid and para-typhoid fever, cholera, dysentery, hookworm disease and diarrhea or "summer complaint." Vaccination alone can not be given all the credit for this saving of suffering and life. Sanitation played its part.

There remains much work to be done in the enforcement of the Sanitary Privy law, and an important factor in this work is to educate the general public in the knowlege we already have and to convince all classes, especially, the owners of houses for rent, that unsanitary toilet arrangements seriously affect the entire household, the neighbors and the whole community.

As previously stated, the exact relationship between the Sanitary Privy and infectious diseases is largely conjectural. The

potential or actual danger involved in the use of one or the other type is also a matter of guess work. Many of the illnesses from the so called "fecal borne diseases" are undoubtedly traceable to other sources, such as nose and throat discharges or water, food or milk contaminated, otherwise, then by human excreta from unsanitary toilets. However, we have proof positive that in localities, where there is a uniform installation of sanitary toilets or privies, the intestinal diseases are very well controlled. These diseases are far less prevalent in large cities than in rural sections and recognized authorities agree that the difference is due, in a large measure, to better methods of excreta disposal in the modern cities.

Visit the average small town or rural community and dine at an average home. Note the number of flies on the table and then investigate the toilet facilities. You wonder that any member of the household has escaped. A fly is an interesting creature. In order to take food into his stomach he must first spit on it, stir the mixture thoroughly and then suck it up. He makes no choice of where that food is found. He may breafast in the unsanitary privy and take lunch in the dining room.

The Bureau of Vital Statistics of the State Board of Health, reveals the fact that every year approximately 2,000 deaths occur in North Carolina from typhoid fever, dysentary and the diarrheal diseases of infants and that approximately 35,000 cases of sickness occur annually from these same diseases. It is very noticeable that the rate from these diseases varies directly with the negro population and the rate is much higher in rural sections. In 1920 the rural death rate for typhoid was nearly doubled the city rate. As long as the typhoid, dysentary and hookworm carriers are abroad the improper disposal of human excreta will play a leading role in the transmission of these death dealing diseases.

In Wayne County in 1920, 46 babies died from entero-colitis and ten adults from typhoid fever. We were able to show a little better record last year with only 20 babies dying from enteritis and 3 deaths from typhoid. Figuring the typhoid mortality rate at 10%, there were only 30 cases in 1912, instead of 100 as was the case 2 years prior. Vaccination, of course, played a large part in the reduction of deaths from typhoid, but it must be borne in mind that only a small per cent of the population are regularly vaccinated every 3 or 4 years. It is also significent that along with the decrease in the death rate from these particular diseases in Wayne County, the general death rate has been lowered from 17.7 in 1920 to 15.2 in 1922. More widespread sewer connections and better rural sanitation must be given due credit.

The field of preventive medicine now covers the following units of work:

1. Control of contagious diseases by vaccination and quarantine.
2. Control of veneral diseases.

3. Medical Inspection of school children.
4. Anti-tuberculosis work.
5. Mosquito and malarial control.
6. Protection of water supplies.
7. Dairy and food inspection.
8. Control of tuberculosis in cattle.
9. Infant and maternal hygiene.
10. Hygiene of the school child.
11. Adult hygiene, including a thorough physical examination.
12. Sanitation—the most important phase of which is the proper disposal of human excreta.

Each of these units of work has its value and contributes to the betterment of health conditions, but, in many communities, the newer and more attractive fields of activity have outgrown and displayed the real backbone of preventive health work, namely sanitation. The dairy inspector may spend hours upon hours in his efforts to induce a dairyman to use better equipment and all the while an insanitary privy nearby unmolested.

The Modern Health Crusade, with its very effective methods of teaching personal hygiene, has been inaugurated in many schools, which, at that very time, have open back privies or no toilet facilities at all.

In closing, I wish to emphasize four points:

1. Disease known to be fecal borne are still widely prevalent in North Carolina.

2. These diseases are being controlled where sanitation is applied.

3. That not only is the death rate lowered from fecal borne diseases, but the general health of the community is improved and the general death rate is materially lowered, in the community that realizes the importance of the Sanitary Privy in the Prevention of Disease.

4. That the fight against fecal borne diseases should be renewed with increased vigor, especially in the rural sections of North Carolina.

DISCUSSION

Dr. D. R. Perry, Lexington:

I shall not attempt to take up here the subject of the sanitary privy. Dr. Ellington has covered that in his paper, which is very interesting and very well gotten up.

What I want to note here is the fact that the death rate for the last two years shows that the rural district are suffering on account of the insanitary privy, just as the whole State was suffering five or six years ago. So far as the incorporated towns are

concerned, the death rate from filth-borne diseases is very low, is negligible. Only one death occurred within the corporate limites of Lexington or Thomasville, and all the other deaths occurred in the country district. Why is this? Because the water and milk supplies are polluted. If you offer to give a man anything free when it is for his good, the chances are nine to one that he will take it. But tell people that it will cost, to build a privy, fifteen to twenty dollars, and they will not listen to it. I do not believe it will go very quickly in any county unless there is a law enacted. Once a man gets a sanitary privy he is satisfied and is glad he has it for it serves as a monument to good health and calls to the memory of the entire family on each visit the value of sanitation, but try to persuade him into it and the chances are nine to one that you will fail.

The incorporated town is provided for by law, and the people do not object to it because they know it is required. A good thing required by law becomes a custom. I would like to see, all over the State of North Carolina, a compulsory privy law, and the only way to have rural privies is by law. The rural population is suffering on account of that one thing. It is compulsory in only a few counties, and there the law is not enforced because it is unpopular, and this because it is not enforced. And again I would say, the only way to protect the rural population is to have a law passed by the Legislature covering the entire State. The enforcement of this law placed upon the Bureau of Sanitary Engineering of the State Board of Health.

Dr. L. J. Smith, Wilson:

I would like to say just a few words regarding this subject. I asked a general practitioner once as to what he gave as the reason for the reduction of typhoid fever in his community. He answered in this order: First, education; second, vaccination; third, sanitation, in the order of importance in the reduction of typhoid fever in that community. We all know that typhoid fever is taken as an index of the sanitation of any community. We certainly have had a clear demonstration of that fact in my county, Wilson. In the incorporated towns of the County, where the State privy law has been put in force, we had only one case of typhoid fever, and that case was doubtful in diagnosis. I have never yet believed it was typhoid fever, and some of the doctors attending did not think so. However, the diagnosis was made as that, and the death certificate showed it. We had thirty-one cases of typhoid fever in the rural districts. Now, how are you going to account for that fact? To my mind it is a clear proposition of sanitation as carried on by the State Board of Health in enforcing the State privy law. I want to say this for the men who are carrying out that law—they have had many ups and downs, many trials, and many things to discourage them, yet they are making progress, and North Carolina should be extremely proud of them. I, for one, want to congratulate them.

J. H. Epperson, Durham:

I have heard this paper and the discussion of it with a great deal of interest. I represent a county which has as one of its chief health problems that of excreta disposal. In the City of Durham and its adjoining suburbs there are approximately 3,500 dry closets. At the present time we have four inspectors employed to handle the privy problem along with certain other work of a sanitary nature. Thus far we have not been able to get the best results from the pit type privy by reason of the type of soil and the filling of the pits with water. This condition, however, is being overcome by raising the height of the mound to about 18 inches and curbing the pit. To give you some idea of the typhoid situation in our community for the past five-year period I quote the following statistics: 1918—214 cases and 31 deaths, 1919—87 cases and 8 deaths, 1920—79 cases and 12 deaths, 1921—136 cases and 13 deaths, 1922—47 cases and one death. In 1922 an intensive campaign toward the entire elimination of the open surface privy was staged with the results above indicated. This year we expect to further reduce the case rate as there is no doubt but what our typhoid problem is largely one of war on the "insanitary privy."

THE IMPORTANCE OF TONSIL AND ADENOID OPERATION ON CHILDREN, WITH PROPOSED PLANS FOR GETTING IT DONE

J. R. McCracken, M.D., Waynesville

I fear that it might appear presumptuous on my part to attempt to enlighten a body of medical men on the subject of the importance of operations for tonsils and adenoids in children, for in recent years, no subject has been brought more prominently to the attention of the profession, and perhaps the average layman is now as well informed on this subject as was the average physician only a decade ago.

We are often asked, What is the function of tonsils and adenoids? They must have been put there for some purpose, should they not be allowed to remain? The first part of this question is difficult to answer. That the tonsil has some definite function has been claimed by a number of investigators, but just what that function is has never been definitely demonstrated, but it is generally belived that it plays some part either in fetal development or in the development in infancy and early childhood. Some investigators think the tonsil is a member in the chain of endocrine glands, Masini claiming to have injected an aqueous extract of tonsil intravenously obtaining the same results as those produced by extract of the suprarenal. As to the function of adenoids, I have never seen any theory advanced, but it is probably the same as that of the tonsil. As to the latter part of the question, the medical profession is unanimous in the opinion that no ill effect is produced by the complete removal of all tonsilla tissue, whether healthy or diseased.

I sometimes wonder if we are going to extremes in the present-day tendency to remove the tonsils and adenoids of every child that is not normal, but let us see. I do not know just what percentage of children in North Carolina have diseased tonsils and adenoids, but basing an estimate on reports of medical inspection of schools examined by competent physicians, we find it will run from twenty-five to fifty per cent. Suppose we take the low average of thirty-three and one-third per cent, meaning that one child in every three attending the public schools in North Carolina is in need of an operation. Is it any wonder, then, that the more conservative of the profession, and the larger part of the laity, have accused us specialists of going wild on the subject?

In this limited paper it will be impossible to consider, in detail, all the pathological conditions brought about by diseased tonsils and adenoids, as the subject would fill a good sized volume, so we shall mention only some of the most important. Adenoids produce their deleterious effect in different ways:

First: By obstruction to nasal breathing they compel the child to breathe through his mouth, giving rise to a long chain of symptoms, among which are: open mouth, contracted nostrils, snoring, listless expression, restless sleep, night terrors, retarded physical development, and, on account of insufficient oxygen, lack of mental concentration and stupidity. In severe cases not relieved by early operation there is a tendency to interrupted or improper development of certain facial bones, especially the superior maxilla. The misplaced atmospheric pressure and the action of certain muscles, when the mouth is open, produce a narrowing of the dental arch. This forces the hard palate upward, bringing the roof of the mouth nearer to the roof of the nose, thus producing a deflection of the nasal septum, which, most any rhinologist will tell you, causes more intranasal troubles than everything else combined. This narrowing of the dental arch also causes a lapping and often protrusion of the upper central incisors, a deformity which is quite noticeable, and often embarrassing.

Second: Inflammatory conditions of the naso-pharyngeal mucous membranes are much more common in children with adenoids, and all the acute nasal inflammations, particularly those accompanying influenza and the exanthemata, are more deep-seated and prolonged. Perhaps the most dangerous condition brought about by adenoids is disease of the middle ear and deafness, some authors claiming it to be an invariable rule that all children suffering from recurrent attacks of suppurative otitis media are afflicted with adenoids.

Third: Certain nervous manifestations, such as epileptiform convulsions, nocturnal incontinence of urine, chorea, hay fever and asthma have been cured by removal of adenoids.

Tonsils also cause trouble in different ways. When very large they often interfere with normal respiration, phonation and articulation, and when diseased are frequently the seat of repeated attacks

of inflammation, the various forms and characteristics of which are familiar to you all. These inflammations often extend to neighboring structures, producing pharyngitis, laryngitis, rhinitis and inflammations of the eustachian tubes and middle ear. But the thing that has brought the tonsil so prominently before the world in recent years is the conclusion that it is the chief portal of entry of various systemic infections, and on this point, I believe, all lines of the medical profession are agreed. This is especially true of those known as cryptic tonsils. The irritation of food particles and bacteria, which enter the crypts of such tonsils, weakens the resistance and perhaps often destroys the mucous membrane of the crypts, leaving no barrier to the entry of these bacteria, with their toxins, into the general circulation. This takes place in the following way: The lymphatic vessel has its origin in the tonsil, passing through the deep layer of cervical glands, thence to the thoracic glands, thence to the thoracic duct, and from this into the general blood current. In this way infection may be carried from the tonsil to all parts of the body. Among the infections which enter the body in this way are those producing the various forms of rheumatism, neuritis, chorea, endocarditis, tuberculosis, anemia, and numerous others.

We are not always able to tell, by the appearance of a tonsil, whether or not it is diseased. Many of the most deadly are not subject to attacks of tonsilitis. One of the most dangerous is the submurged, or buried, tonsil which is often entirely overlooked on inspection of the throat, because it is covered by the adhesion of the anterior and posterior pillars.

Treatment of diseased tonsils has been tried in various forms: by expressing the contents of the crypts, cauterization, astringent applications, and autogenous vaccines. Perhaps some of these methods improve some tonsils, but the results, as a whole, are disappointing. Recently several operators have reported very happy results, in certain cases, from the x-ray treatment, and I am convinced, by the literature I have read on the subject, that these claims are well founded and in cases where, for some reason, an operation is not advisable I would certainly recommend the x-ray treatment. It is claimed that in practically all cases the hypertrophied lymphoid tissue is perceptibly reduced, and all the local symptoms are improved. But as to whether or not it sterilizes the contents of the crypts, and deep-seated abscesses within the tonsil, there is still considerable doubt, and after all, in my opinion, there is nothing that can compare with a complete enucleation of the tonsil with its capsule.

Now, if diseased tonsils and adenoids are as bad as I have pictured them, and if they are as abundant in North Carolina as my figures would indicate, what could be more important than getting these diseased tissues removed from our children, before they have had time to get in their deadly work?

This brings us to the second phase of my subject, which I approach with fear and trembling. How are we to get it done?

The future citizenship of our State is to be made up of the children who are now attending our public schools, thirty-three per cent of whom are afflicted with diseased tonsils and adenoids. Shall we allow them to grow up to manhood and womanhood under this handicap? Is it not up to us, as guardians of the public health, to devise ways and means by which they may have an opportunity to become normal men and women?

The Legislature of North Carolina in 1917 recognized the responsibility of the State to her defective future citizens, when it passed an Act providing for the physical examination and treatment of school children. And while this law was not all that it could have been, it was a great stride forward, and should mark an epoch in the history of our commonwealth.

After the children were examined, and the cards sent in, the State Board of Health was called upon to do something to help provide these thousands of defective children with treatment. But what could be done? Perhaps the great majority of them lived in sections remote from a throat specialist, and the expense of going to a specialist, not to mention a fee, was to many of them prohibitive. The State Board of Health could not go out into the neeks and corners of the State and carry these children to hospitals for operations, for in many cases the nearest hospital was a hundred miles away. The Board of Health decided that the call of these thousands of children must be answered, and the plan of group operations for tonsils and adenoids was the result. This plan is, or should be, familiar to each of you, and need not be outlined in this paper. These tonsil and adenoid clinics, as they are called, have been severely criticised by numerous physicians in the State, and have been condemned by a few County medical societies. But let us see what they have accomplished. They have carried this work into a majority of the Counties of the State, and over six thousand (6,000) children have had operations for tonsils and adenoids, and so far as I know, with only one death. These figures will compare favorably with those of the best operators of our country, operating in our best appointed hospitals. Hundreds of these children, no doubt, would never have had their operations had it not been for these clinics. And this is not all. The people in the communities where these clinics were held have seen the wonderful results follow these operations, and hundreds of other children have been carried to specialists, as a result of the educational features of this campaign. And I believe that every nose and throat man in North Carolina has been made busier, and his income increased by this great work of the State Board of Health.

But you are expecting me to propose a plan, or plans, for getting this work done. This is a knotty problem. Is the responsibility for this work upon the State, or upon the County? I am of the opinion that it should be upon the County, and I believe this work could be carried on effectively in each County of the State by the employment of a whole-time public school nurse, whose duty it should be, to visit all the schools of the County, examine all the

school children, and visit personally the parents of all that are diseased and defective, and urge upon them the importance of treatment. Then advise with the County Board of Health, and they together devise plans by which this treatment can be carried out. During vacation she should revisit all the children who are on her list and have not been treated, and by pointing out the improvement in those who have been treated, she should be able to induce a great many more to accept treatment.

If a few strange nurses from the State Board of Health can go into a County with a population of seven thousand, and get one hundred children operated for tonsils and adenoids in one week, surely a nurse, known to the children of a County, could accomplish as much in a year.

But knowing as much as I do about the average Board of County Commissioners, I am fully aware of the fact that only a few Counties could be induced to adopt such a plan, and the only way it could be made effective would be to have an Act of the Legislature requiring it.

And with our present legislation, I can propose no plan that I believe will be as effective and far-reaching in the majority of the Counties of North Carolina as the one followed by the State Board of Health during the past few years.

DISCUSSION

Dr. J. E. Smith, Windsor:

In examining these school children I often get into trouble. I say the child has enlarged tonsils, and the child speaks up and says, "Why, I had them taken out." Now, what is the trouble? Is a small piece of the tonsil left, and does it grow back, or what is the cause of it? We have not had a clinic in our County, but a lot of work has been done by local eye, ear, nose and throat men. I would say that ten per cent of the children that have had the operation done still have trouble, and when this occurs in a rural section it hurts the work. I would like to know why this happens, and I hope that some one will answer my question.

Dr. J. A. Morris, Oxford:

Dr. Smith has mentioned a subject which is very interesting to me. I was in a large consolidated school this year, and told a boy that his tonsils had to be removed. They lacked an examining room, and this statement was made before a room full of children. A titter went around the room, and it was said that his tonsils had been removed. But certainly there was a tonsil protruding from behind the anterior pillar. As soon as I learned what the titter was about, I had the children march up and showed them the tonsil. It is very interesting to me to watch every child and keep tab. I know that operators who have the best reputations send back to their homes children who do develop remains or new growths or

something corresponding to tonsils, or at least occupying the same place. In these same children there is a weakness. I do not know whether it grows from the part of the tonsil left, or how, but I do know it develops. If you leave a part of the tonsil it hypertrophies and extrudes out, and is worse than before. So I say this does not discount any specialist, for if it does it discounts every specialist who operates on children. I might mention several specialists who have had results of that sort. I always ask who removed the tonsils. Some of the children go back to these specialists, and I have been execrated, but I invite the whole world to come and see. It can not be denied that there is some tissue there.

Now, as to the results in these particular cases, the operation is not all that needs to be done to these children. I have quit saying that they will have wonderful improvement if they will have the operation done. The tonsils may be pus-makers, and many of them are. I believe that twenty-five per cent of the children in Granville County express pus from their tonsils when they swallow. I have seen pus tonsils in red-cheeked children, which seemed to be doing no harm, and I have seen them removed from other children without any apparent benefit. They contribute to poor nutrition, but other things have to be considered. I believe they should be removed, and I would that every man would take up the work in his county and have them removed, because so often the future of the child is wrapped up in the removal or non-removable of bad tonsils.

Dr. R. S. McGeachy, Kinston:

Just a few months ago one of the leading lawyers of our County had his child's tonsils removed. Somewhat later I called him in and asked if he would mind giving a statement as to the benefit derived by his child from the operation. He told me to write what I pleased and he would sign it. Shortly after I went to LaGrange, where I looked at a child's throat and gave him a card to take home. Then I saw two or three other children, and gave a card to another one. The nurse slipped up and said, "You are giving cards to Dr. Adams' children." But I said, "I don't care. They need it." One of the children had disturbance of the eyes. The child's eyes kept getting worse and worse, and his father took him to a specialist in Kinston, and then took him to New York for a week or ten days. The child's sight got so bad that it had to be led around. He happened to be in Goldsboro one day, and asked a specialist there about it. The specialist said he saw nothing the matter with the child's throat or eyes, but said, "Let's take out the tonsils." It was done, and that child is practically well now.

There was another child in LaGrange to whom I gave a card. He said, "Doctor, I know it needs to be done, but it will be the third time." He had about the largest tonsils I have ever seen. He told me that as soon as school was out, he would have them taken out again.

There is no work, I think, so important as the removal of tonsils and adenoids in cases where it is needed. If you remove them

wholesale you will remove some that are doing no harm, but I say go ahead, it will not make any difference. There is nothing, in my opinion, that will accomplish more than to remove children's tonsils.

Dr. J. E. Smith:

I did not mean to cast any reflection upon the specialists in my County, because they are just as good there as anywhere, but they all leave them, and I want to know why it is. The best man in Richmond operated upon my wife, and her tonsils give her as much trouble now as they did before.

Dr. A. J. Ellington, Goldsboro:

Allow me to emphasize a much neglected point in tonsil and adenoid operations in children. If the tonsils have been the seat of recurrent inflammation, there will be a lot of adhesions between the tonsil and its bed, and these adhesions make the removal of all tonsil tissue very difficult. Therefore we should take care not to tell the parents that the operation will completely cure the child, but tell them that the child may have to reurn for a second operation or for further nose and throat treatment.

In operations among school children the important thing is follow-up work. The nurse can not do better than to visit these children several weeks after operation and see how they are getting along. If they are not doing well, there may be trouble in the surrounding structures—pharynx, posterior nares or accessory sinuses—or small pieces of tonsil not removed. Follow-up work will enlighten parents and get the proper treatment instituted in those children who are not cured by simple tonsil and adenoid operations.

Dr. L. L. Williams, Mount Airy:

I think this goes back to Dr. McGeachy's Golden Rule. We make hundreds upon hundreds of examinations of school children. We find children that have had the operation, and yet we find some portion of tonsil left. I think it is our duty, in these cases, to go to the parents of these children and explain the situation, and to take it up with the specialist, whoever he is. In that way the parents will have some feeling toward the work other than that of "cussing." If we do that I think we shall be doing a great favor to the specialist and to the medical profession.

Dr. Joseph B. Greene, Asheville:

In the discussion of this excellent paper I wish to state that it has interested me greatly not only as a specialist dealing largely with diseased tonsils and adenoids, but also from the standpoint of public health. The presence of diseased tonsils and adenoids plays such an important role in the acute infectious diseases of children that we have come to expect a milder course of these diseases, with fewer complications, when these offending glands have been successfully removed. Place of Boston, a noted pediatrician, has recently reported a large series of cases of scarlet fever and measles

in which the tonsils and adenoids were removed during the acute attack of the disease. The results were very satisfactory in that the course of the disease seemed milder and the complications fewer. This procedure may seem a bit radical at this time, though in a few years it may become routine procedure. When I first removed diseased tonsils and adenoids in 1907 to get rid of diphtheria carriers it seemed to some an unsafe procedure, while now it is in general practice everywhere.

I would like to emphasize the importance that diseased tonsils and adenoids play in the causation of deafness. The association is so close that any qualified specialist treating a case of deafness, unless it be a child with the unusual form of congenital deafness, would as the initial step remove the diseased tonsils and adenoids.

I would like to say just a word or two in reference to the x-ray treatment of diseased tonsils. Dr. McCracken was not very enthusiastic about this type of therapy, and I am still less so. The experience of careful observers who have tried the x-ray is far from encouraging. It is difficult to understand how this method of treatment could rid our patient of infection deeply situated in the crypts of the tonsil. In my opinion a complete removal of the gland is the only sure way of giving the relief which the patient has a right to expect.

It is on account of the harmful effects of diseased tonsils and adenoids on the precious sense of hearing that we as physicians and health officers are justified in taking every measure to safeguard and protect the future citizens of our State. This naturally brings me to the question, what shall we do to remedy the crying need for tonsil and adenoid removal throughout North Carolina? Like the author of the paper, I am unable to offer a remedy, though the matter is a very important one as a preventative measure. It may be of interest to state briefly the system adopted in Buncombe County. Each specialist in Asheville serves for one month, during which time he receives patients from physicians and public health nurses. The patients are classified as A, B and C. Class A embraces those who pay nothing; Class B those who pay something, a small and indefinite fee. Class C pays $12.50. This latter amount is probably slightly more than the cost to the hospital, and in this way serves to take care of those in the other two classes. This system has worked very well, and in my opinion the children of the indigent class of Buncombe County have been well taken care of. It would seem to me that in rural counties a public health nurse should be provided to gather together the children needing the operation, and a competent specialist secured to perform the necessary operations.

Dr. McCracken, closing the discussion:

I appreciate the discussion which my paper has evoked.

In answer to Dr. Smith's question, as to whether or not tonsils ever grow back, tonsils that are completely removed never grow back. In very small children, where there is a small piece left this

will often hypertrophy and grow almost as large as the original tonsil, but that is rare.

In regard to the case reported by Dr. McGeachey, where the removal of the tonsils cured the eye trouble, there are numbers of cases on record in which this has happened, and in which there was great improvement in the eyes afterthe removal of tonsils and adenoids.

I have been disappointed, in a degree, that more of the doctors did not discuss the latter phase of the paper, as to how to get it done. There is no trouble in writing a paper on the importance of the removal of tonsils and adenoids, but how to get it done is a difficult problem.

ADDRESS BY DR. JOHN A. FERRELL

Upon being asked by the President to address the Association, Dr. John A. Ferrell, Director for the United States, International Health Board, New York City, spoke as follows:

I wish to express my appreciation for the privilege of attending the meeting you are holding, and to assure you that I am deriving pleasure and benefit in hearing the able discussions. They are a direct outgrowth of your contact with the problems in the field. North Carolina is looked to for leadership in public health work. You are solving the field problems and in doing so are making public health history.

The State Board of Health can go just so far. It is a central mucleus made up of functional divisions of service. To carry the gospel of hygiene to schools and homes, it is necessary that there be local full-time organizations, the staff members of which know the individuals, the families, the psychology of the community, and how to get the people to accept and apply the principles of public health.

You may encounter difficulties. I was interested in the discussion this morning of the sanitary privy; how it has been installed in thickly populated communities with striking results and how the problem in the rural areas has been more difficult. I am strongly convinced that its solution will be found by the county health organization. You should strive to make the work in this and every other sphere as efficient as possible. If you develop effective procedures for one county you have the key to the State because they can be adapted to meet varying conditions.

County health work reminds me of builders of automobiles. They spend months in developing a suitable model. Then quantity production begins. You are developing the model for county health work. Quantity production in number and quality of county organizations will follow.

I congratulate you upon your accomplishments, and assure you that I come to your meetings with the expectation of deriving real benefit because you are in the line of action. No health official is more important now than the county health officer.

I thank you for the pleasure of being with you. I never miss an opportunity to gain information as to what the health officers in North Carolina are doing.

Dr. Bulla, President:

I thank Dr. Ferrell for his presence here, and I am sure we all enjoyed his remarks.

MENTAL HYGIENE

Albert Anderson, M.D., Superintendent State Hospital, Raleigh

Salvation, as religion teaches, is the greatest reality on earth or in Heaven. Salvation as it refers to the conservation of physical, mental or moral health is a wonderful asset in making happines or in getting money. First things in importance are frequently considered last, and things of least importance are considered first. This is fundamental in human nature and frequently in business. Individuals, corporations, and life insurance companies, seeing a life waste going at the expense of the individual or corporation through the years, allows this waste to continue without an effort to stop it. Every day, in every way, the *habit* to postpone till tomorrow beginning to stop the disease, to check the waste, or reverse the course, grows stronger and stronger and suddenly we awake to the fact that the disease is incurable, the waste channels are out of sight and the reverse course cannot be made for the lack of will power. The power of initiation is a wonderful asset; it makes impressions upon the mind and impressions produces ideas and ideas form judgments. People should think, ponder, consider along logical lines, and when conclusions are reached the power of the will should strike out to establish your conclusions. Judgments, conclusions, mental efforts of every kind are not only worthless without execution but react to lower mental level. Smallpox, cholera, typhoid fever, diphtheria, are found only in a few places. Why? Because somebody started to think straight, see accurately and act according to judgments based upon facts obtained. This is Mental Hygiene. Mental health, based on working the mental faculties, desiring to reach or find the truth and by the will power carrying this light of truth to those that sit under shadows—of diseases, ignorance, prejudice and madness. About fifteen years ago I saw a T. B. Campaign enter Raleigh, holding high the scientific light of truth. The people were called in from the streets, churches, schools, colleges, factories, stores, offices; high and low; rich and poor; learned and the ignorant—all pointed to the cause of T. B.—the importance of eradicating this cause. Pure air, open windows, good food were urged as some of the ways to reach vigorous health as physical immunity against this disease. The mind controls the body. How are you going to control the body in its walking, sleeping, working, eating and going—north, south, east or west—without a mind that knows the best way to do these things? This Mental Hygiene movement came out of "a mind that found itself" and began its career

about ten years ago. Clifford W. Beers, a gentleman, educated and refined, fell into mental sickness and suffered the tortures of the damned for three years in various hospitals. In spite of abuse, brutality in management, ignorance in treatment, his sick mind struggled in intellectual confusion, emotional disturbances of anger, fear, hatred alternating with visions of imaginary power, glory, sometimes joy. Incarcerated in body, imprisoned in soul and mind by mechanical appliances of cuffs, sleeves, straightjackets and other tortures, providentially, I believe, his mind finally found itself. He sat like one of old, "clothed and in his right mind," at the feet of a spiritual personality that walked with him through dark cells, gave endurance to bear the physical tortures of the mechanical appliances; gave reviving power to his atrophied will; memory re-asserted its power and he gave the world that thrilling, truthful story of how a "mind found itself". Nearly ten years ago I saw again another campaign come to Raleigh called the Mental Hygiene Conference, exhibiting in two hundred charts everything connected with mental sickness—types of mental disease—methods of treatment—bad and good. With this exhibit came a group of lecturers on mental diseases lasting two weeks. This Mental Hygiene torch brought the light of physiatric truth and some caught a vision from this search light that opened up the dark places that held so many mentally sick in bondage and freedom—light began to do its work. In less than a decade all physical tortures are gone and brutal management driven into outer darkness. Medical minds have caught the vision that reveals conditions to their intellects, stirs their hearts to emotions of gentleness, kindness and love in their dealings with these—God's mentally sick ones.

One of the world's greatest psychiatrists looked me squarely in the eye last May and said: "I approve and praise the work I have seen in the State Hospitals for the mental sick, after my inspection and visit for a week." He saw symptoms of mental hygiene worthy of notice and made a favorable prognosis after the leaven had worked about eight years which he had put in our Mental Hygiene Conference in 1913.

This work means prevention as well as conservation. All honor to our State Board for its successful and pre-eminent work for the physical welfare of our people. The psychiatrists must build upon a similar basis for mental health. For the physical, we are pouring out money by the hundreds of thousands to put the body in the best possible condition. Focal infection in the teeth, tonsils, organs, joints, tissues, sinuses—wherever found—must be located and eradicated.

Sera for typhoid fever, veneral diseases, etc., are preventing and curing. All speed to your noble work. But come with me to a serious consideration of that immortal part of the personality—the breath of God—the mind—that must care for, control and direct the body if it be possible to put it in a healthy condition. Mental health gives the body direction. How much to work, to eat, to do

this or that. The mind diseased, the body at times stands immovable, with all senses apparently fixed—dull symptoms of hearing, seeing, feeling, tasting—no response to reaction. In other cases ideas in one fight after another every conceivable subjects—then into the depths, glooms and shadows. In their excitement they are too busy and confused to properly direct the body. In their depression they are too fixed to care what becomes of the body. This is sufficient to give you the relative importance of the two. The body must be the servant of the mind in the eternal fitness of things. God made it so. But the union of these two—how is it? No one can tell. The body without the mind is dead and the mind without the body cannot serve fellow man. The State Board of Health with its wonderful strides of progress in bringing physical health of hygiene to the political body of North Carolina has done all this upon a mental hygiene basis of seeing individually straight to the health programs inaugurated in the last decade, with a compelling desire to serve and lead the people to see and desire health and shun disease and a will power to endure till the job was done. This is mental hygiene revealing itself in directing the public health body to fix programs upon a mental hygiene basis. These accomplishments are the results of mind in health—not disease. Look to the mind, therefore; there is the directing power—the throne of the ruler.

The superman is so because of his supermind. Some wag has said that Woodrow Wilson was considered too much of a superman in his ideas for world peace through the League of Nations, but, after two years, we are about to conclude that a super man is better than a soupy man for President of the United States. We must have our laboratory equipment for the mind as well as for the body. Conflicts, complexes, doubts, retardations, hallucinations, delusions, etc., must be found and eradicated or they will poison the mind and bring it to disease as surely as focal infection would produce physical disease. Pathology of the mind is not understood like pathology of the body. Psychopathology and psychoneurology and psycho this and psycho that is spoken glibly like a parrot—frequently a sound without meaning. The great Apostle Paul said "I had rather speak five words with my understanding, that by my voice I might teach others also, than ten thousand words in an unknown tongue." Externally we judge a mind diseased by its conduct or the behavior of the patient. Typhoid fever is discovered by symptoms—lights that lead to the discovery of typhoid germs with all their results. Wrong impressions, ideas and thoughts fixed in the mind manifest their poisonous influence through the conduct and behavior of the patient —mental symptoms. The physical laboratory technician has to do with microscopes, cultures, stains, etc.—the mental laboratory has to do with an analysis of the immaterial. But cooperation must not be forgotten. The theory of somatic causes as foundations for mental disease is not yet proven. Infected teeth, buried molars, diseased tonsils, stomach and intestines may be found and removed,

but while this improves the mental health it does not always bring complete mental recovery. "Play safe."

Not long ago a conscientious layman, skilled in psychology, undertook to relieve a woman complaining of nervousness, headache, and eye-strain, by means of suggestion or psychotherapy. His methods were correct, legitimate, and those frequently used by physicians who specialize in treating nervous or mental conditions. He himself was conservative, competent in his own field, and respected by laity and medical profession alike. But the patient, after some three months of treatment failed to improve. Indeed she grew worse and her family finally induced her to consult a physician. He quickly called a surgeon in consultation, who confirmed his diagnosis of brain tumor. Later she died.

The moral? That treatment by suggestion or psychotherapy is distinctly valuable and has a place in the relief of some cases of nervous trouble. But it should never be used without first ruling out conclusively the possibility of some obscure physical cause for the nervous symptoms through a physical examination by a competent physician. Headache and eye-strain, to be sure, often are symptoms of nervousness and may often be cured by psychotherapy —but they may be equally often due to a definite physical cause. The only way to find out is to consult a physician. Then if no organic basis is found, use suggestion if you must.

Attempting to cure headaches caused by pressure of a growing brain tumor through suggestion or psychoanalysis is on the same plane as an effort to replace an amputated leg by repeating "Every day in every way," and so forth.

DISTRIBUTION OF MALARIA IN NORTH CAROLINA

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A careful study of the morbidity statistics of malaria in North Carolina, as obtained from the Bureau of Vital Statistics, for the years 1917, 1918, 1919, 1920, and 1921, indicates that malaria is of serious public health importance only in that tier of counties, about two in width, bordering along the Atlantic Coast.

A more careful study of the available records for the tier of counties bordering the coast would lead one to believe that the mortality from the disease, although subject to annual fluctuations, is gradually on the decline. This decline in the death rate is perhaps due largely to the less severe types of the disease, such as the cerebral (convulsive, paretic, comatose, hyperpyrexial) and algid forms (hemorrhagic, dysenteric, choleriform, syncopal, etc), than to a true decline in the incidence. One obtains an impression from talking to the physicians and older settlers of the eastern section that, although the mortality rate is lower than in former years, the incidence of the disease remains about the same from year to year.

The circumstances responsible for the continuence of the disease from year to year with little or no decline is easily explained

when one studies in detail the conditions necessary and responsible for its transmission. All along the eastern coast, where malaria is to be found in abundance and where it is a menace to the health of the people, one will find an even climate, never too cold longer than three months of the year to prevent sporadic mosquito flights, and an abundance of rainfall, whose water table lies nowhere lower than a few feet below the surface. The elevation of each county is only a few feet above sea level, and a large majority of these feel regularly the effects of tidal waters. The soils range from the light, deep, sandy soils of the interior, to the deep, black, pasty swamp land as one approaches the coast. The low, swampy condition of almost the entire Eastern section of the State, the abundance of rainfall, and the tidal waters covering the low lands at regular intervals, offer excellent opportunities for the propagation of the responsible mosquitoes. This condition, together with the careless way of living assumed by the average layman, renders the spread of the disease inevitable.

Believing that this county will represent the average, coming within the tidal-water section, the steps followed in studying the incidence and the data elicited during the survey are given.

(1) During the months of September, October, and November of 1921, a preliminary survey was made of what was thought to be a representative section of the county for the purpose of determining the incidence of the disease, its severity and to what extent the efficiency of the people was affected. For this purpose an area seven miles in length and three miles wide was selected in which to conduct an intensive survey, so that the information gained as to the public health importance of the disease might be used in determining the wisdom of extending control operations over the entire county.

This survey consisted in preparing a map of the proposed territory, locating each home thereon, with special reference to the breeding of mosquitoes, listing the population, taking a history index as to prevalence of the disease during the year, and taking blood smears for the purpose of establishing a parasitic index.

Survey Map—The map prepared by means of a plane table gave to each home the proper location, with respect to public roads, railroads, wood-line, and marshes, which afforded the field observer an opportunity to study the propagation of mosquitoes with reference to the location of the house. Each home was given a number, in order that the occupants thereof might be easily observed and the incidence of the disease recorded with reference to the topography of the area.

Population—The population of the area surveyed was 1,385 at the time of the survey, with 749 whites, and 736 colored.

The accompanying table gives the number of deaths per county for the five previous years, and the rate per 100,000 population. The accompanying graph gives an idea as to the mortality distribution along the coast as compared with the remaining portion of the State.

WATAU
MITCHELL
AVERY
YANCEY
MADISON
CALD
BUNCOMBE
SWAIN
HAYWOOD
McDOWELL
GRAHAM
RUTHERFORD
JACKSON
HENDERSON
CHEROKEE
MACON
POLK
TRANSYLVANIA
CLAY

	1917		1918		1919		1920		1921	
	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate
Alamance	1	3.2			1	3.1				
Alexander	1	8.2								
Alleghany										
Anson	1	3.5	2	7.0	1	3.4	2	7.0	1	3.4
Ashe										
Avery					1	7.1				
Beaufort	25	73.2	7	20.2	14	39.9	23	74.1	17	54.7
Bertie	7	28.1	7	27.8	4	15.7	8	33.3	4	16.5
Bladen			1	5.4	1	5.4			3	14.9
Brunswick	2	12.7	1	6.2	2	12.4	4	26.8	2	13.3
Buncombe			1	1.8	1	1.8	1	1.5		
Burke	1	4.1			1	4.0				
Cabarrus	1	3.4	3	10.2	1	3.3	2	5.9		
Caldwell										
Camden										
Carteret	4	26.2	6	38.9	4	25.6	2	13.0	2	12.7
Caswell					1	6.7				
Catawba	4	12.4								
Chatham	5	21.0	1	4.1	3	12.4			2	8.3
Cherokee										
Chowan	3	24.8			2	16.2				
Clay										
Cleveland					2	5.9	1	2.9	1	2.8
Columbus	6	18.2	4	11.8	6	17.4	5	16.5	2	6.5
Craven	16	60.0	23	85.8	28	103.9	26	89.5	11	37.1
Cumberland	7	17.6	1	2.5	8	20.1	9	25.6	4	11.3
Curituck	1	11.7							3	41.2
Dare	2	40.7			1	20.3				
Davidson	1	2.9	1	2.9						
Davie										
Duplin	2	7.2	2	7.1	4	14.1	4	13.2	3	9.6
Durham	7	16.7	3	7.0	1	2.2	1	2.3		
Edgecombe	4	11.1	7	19.1	1	2.6	1	2.6	7	17.9
Forsyth	2	3.5	3	5.2	1	1.7	1	1.2	1	1.2
Franklin	4	16.1	5	20.2	2	8.0	2	7.4		
Gaston	2	4.5			1	2.1				
Gates	4	38.1	3	28.6	1	9.5	3	28.4	1	9.4
Graham										
Granville	3	11.3					1	3.7		
Greene					2	14.2	2	12.3	1	5.9
Guilford	2	2.6	2	2.5	3	3.7	1	1.2	1	1.2
Halifax	19	44.5	9	20.7	2	4.5	9	20.5	5	11.1
Harnett	2	7.4	1	3.6	2	7.1			2	6.8
Haywood			1	3.9						
Henderson			1	5.5						
Hertford	4	24.5	2	12.2	1	6.0			2	12.1
Hoke					1	6.6			1	8.5
Hyde	5	56.5	2	22.6	2	22.6	4	47.6	5	59.6
Iredell			2	5.1	3	7.6	1	2.6	2	5.1
Jackson	1	7.2								
Johnston	3	6.2	2	4.0	4	8.0	5	10.2	3	5.9
Jones	5	55.0	1	10.9	6	65.3	4	40.3	3	29.7
Lee	1	8.3	1	8.3	1	8.3				
Lenoir	8	31.0	9	34.4	5	18.8	3	10.1	3	9.8
Lincoln										
Macon										
Madison	1	4.9			1	4.9	1	4.9		
Martin	9	46.0	3	15.1	3	14.9	5	24.0	3	14.0

	1917		1918		1919		1920		1921	
	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate
McDowell										
Mecklenburg	10	13.2	3	3.9	5	6.4	2	2.4	3	3.6
Mitchell										
Montgomery	1	6.4	1	6.4					1	6.8
Moore	2	11.1			1	5.5	1	4.6	1	4.5
Nash	4	10.0	5	12.3	2	4.8	1	2.4	4	9.4
New Hanover	3	8.1	3	8.0	5	13.2	8	19.6	4	9.5
Northampton	2	8.6			9	38.4	12	51.7	8	34.3
Onslow	11	69.9	5	31.3	11	68.0	4	27.2	7	47.3
Orange			3	19.5						
Pamlico	7	62.6	8	69.1	8	68.0	11	121.4	8	88.3
Pasquotank	3	15.8	2	10.4	4	20.4			3	16.8
Pender					1	5.7			2	13.5
Perquimans	3	25.5	4	33.7	1	8.3	1	8.9	4	35.8
Person	1	5.6					2	10.5		
Pitt	17	42.1	6	14.6			10	21.9	8	17.0
Polk			1	12.2						
Randolph	3	9.8	2	6.5						
Richmond			1	4.3						
Robeson			3	4.9			4	7.3	1	1.9
Rockingham	2	5.1	3	7.6	1	2.5				
Rowan	3	7.1	7	16.3	2	4.5	2	4.5	2	4.4
Rutherford										
Sampson	3	9.1	3	9.0	1	2.9	1	2.7	2	5.4
Scotland										
Stanly					1	4.1	1	3.6		
Stokes										
Surry										
Swain										
Transylvania										
Tyrrell			2	36.9					1	20.6
Union	2	5.2	4	10.4	6	15.3	7	19.4	2	5.4
Vance	2	9.3	2	9.2	1	4.5				
Wake	4	5.7	6	8.5	1	1.4	2	2.6	2	2.5
Warren	4	18.9	2	9.4					1	4.5
Washington	4	35.1	2	17.4			1	8.7	4	34.8
Watauga										
Wayne	24	61.7	6	15.2	9	22.6	3	6.8	8	17.8
Wilkes										
Wilson	1	3.1	2	6.2	3	9.1	4	10.8	1	2.6
Yadkin					1	5.9	1	6.1		
Yancy										
Total	292	11.9	203	8.2	202	8.1	209	8.1	172	6.5

While a study of the geographic distribution of the deaths from the disease conveys an idea of its public health importance, it was not considered sufficient proof to inaugurate county-wide control measures. In view of this fact the State Board of Health, co-operating with the International Health Board, made during the fall of 1921 and summer of 1922 an intensive survey of Pamlico County with the following prime objects in view:

1. To determine the incidence of the disease and the extent to which it is a menace to the health and economic efficiency of the people.

2. Factors responsible for its transmission.

POPULATION OF INTENSIVE AREA—AGE GROUPS (1921)

	White			Colored		
Ages	Male	Female	Total	Male	Female	Total
0–5	50	42	92	43	56	99
5–10	45	49	94	52	67	119
10–15	49	41	90	49	56	105
15–20	30	34	64	41	46	87
20–25	35	37	72	32	29	61
25–30	26	30	56	14	19	33
30–35	26	30	56	16	24	40
35	115	110	225	99	93	192
Total	376	373	749	346	390	736

AGE GROUPS EMPLOYED IN INTENSIVE AREA (1921)

	0–5	5–10	10–15	15–20	20–25	25–30	30–35	35
Number (1921) ----	191	213	195	151	133	89	96	417
Percentage of Total Population (1921)	12.82%	14.38%	13.13%	10.10%	8.96%	5.99%	6.46%	28.08%
Number (1922) ----	196	189	167	137	105	71	81	350
Percentage of Total Population (1922)	15.12%	14.59%	1289%	10.57%	8.10%	5.48%	6.25%	27.77%

History Index—A history index of every individual living in the intensive area was obtained for the year 1921 at the same time the census of the area was established. In preparing the history index, considerable care was exercised to accept as positive histories only those who could give a definite history of repeated periodicity, corresponding to the clinical picture of the supposed infection. As a result of this rigid form of history taking it is believed that the amount of malaria has been under estimated and that the minimum instead of the maximum is given. House to house visits were made for this purpose in order that the parents of children might be consulted regarding the taking of the histories and the interpretation placed on the statement of the child.

The following tabulated summary gives the data elicited in the survey, according to age groups:

HISTORY INDEX—INTENSIVE AREA (1921)

	White				Colored			
Ages	Male	Female	Pos.	Neg.	Male	Female	Pos.	Neg.
0–5	50	42	38	54	43	56	30	69
5–10	45	49	52	42	52	67	73	46
10-15	49	41	48	42	49	56	67	38
15–20	30	34	36	28	41	46	53	34
20–25	35	37	41	31	32	29	40	21
25–30	26	30	31	25	14	19	18	15
30–35	26	30	31	25	16	24	19	21
35	115	110	96	129	99	93	98	94
Total	376	373	373	376	346	390	398	338
Percentage giving positive history				49.79%			54.07%	

Parasitic Index—As a further means of arriving at a conclusion as to the prevalence of the disease in the locality, a parasitic index was established. For this purpose a thick with corresponding thin smear was made from each person willing to have it done. As the

smears were taken they were numbered with the ordinary soft lead pencil by writing direct into the dried blood the serial number of the individual, which corresponded to the history index number.

PAMLICO COUNTY PARASITIC INDEX

	White								Colored							
Ages	Male	Female	Total	Pos.	Neg.	Ter.	Quar.	Aest.	Male	Female	Total	Pos.	Neg.	Ter.	Quar.	Aest.
0–5	59	57	116	43	73	32	0	8	6	3	9	3	6	3	0	0
5–10	214	212	426	203	223	171	1	36	2	5	7	3	4	2	0	1
10–15	161	221	382	169	213	135	2	25	5	6	11	6	5	6	0	0
15–20	75	82	157	69	88	56	0	9	13	14	27	16	11	15	0	0
20–25	36	44	80	33	47	28	0	2	4	1	5	1	4	1	0	0
25–30	31	40	71	24	47	17	0	5	3	1	4	2	2	2	0	0
30–35	47	35	82	33	49	24	0	6	5	2	7	5	2	5	0	0
35	132	109	241	79	162	61	0	17	15	4	19	9	10	8	0	1
Total	765	790	1555	653	902	517	3	108	53	36	89	44	45	42	0	2

Total examined -----	1,555	Percentage of Ter.---79.17%	
Total positive -------	653	Percentage of Quart..	.45%
Percentage positive--42.06%		Percentage of Aest.--16.54%	
Positive, type not determined ---------	25		

Total examined -----	89	Percentage of Ter.--95.45%	
Total positive -------	44	Percentage of Quart.	0
Percentage positive--46.85%		Percentage of Aest.--	4.55%

1,216 were taken in this way, which was 82% of the population living at this time in the intensive area, and 428 living outside. From the tabulated summary of the blood examinations made, it will be seen that 42.06% of the whites were found infected, considering all ages, and 46.85% of the colored. The Teritian type of infection predominated, ranging in percentage from 79.17% of the total positive found, to 95.45%.

Sixty to seventy per cent of the entire population suffer with the disease at some period during the year, with the degree and severity of infections varying according to the living conditions of the people. The higher the financial standing, the less prevalent the disease was found to be. A careful study of the prevalence of the disease, together with the financial loss was made in order to determine what class among the agriculturists actually suffered the greatest loss during 1921. For this purpose they were grouped into wage-hands, renters, and resident owners.

The variation in the degree and severity of infection, as noted in the different classes, is due to several factors, all of which when combined tend to promote rather than prevent infection for the poorer classes and lesson the opportunities for the more well-to-do. The homes of the wage-hands are, as a rule, located in the most convenient places for the farming interests, with little consideration given to the sanitary comfort of the occupants. They are usually so loosely constructed that effective screening would be impossible, and so unfavorably located as to make mosquito prevention also an impossibility. As a rule the home of the average tenant is of slightly better construction, and more favorably located with reference to the breeding of mosquitoes, and the occupants, as a rule, are of a better and more intelligent class, all of which is useful in lessening the incidence of the disease. The homes of the resident owners are as a rule favorably located, well constructed, and in almost every case effectively screened.

The following tabulated summary gives the data elicited in this survey.

INCIDENCE OF MALARIA IN INTENSIVE AREA ACCORDING TO STATUS OF FAMILIES FOR 1921

	White				Colored			
	No. Houses	No. Persons	No. Cases	Rate per 1,000	No. Houses	No. Persons	No. Cases	Rate per 1,000
Resident Owners	124	527	142	239.4	72	268	127	473
Renters	32	206	84	407.7	50	396	222	566.6
Wage Hands	2	16	5	312.5	16	72	49	680.5

Conditions Responsible for the Transmission of Malaria in Pamlico County—Whatever favors the presence and increase of malaria-bearing species of mosquitoes tends to the increase of malaria, and vice versa; whatever favors the access of these insects to infected in-

dividuals after the parasites have passed through them favors the acquisition of malaria. It becomes more evident, as the work progresses, that more detailed study of the anophelinae, with special reference to their breeding habits, would be necessary before a control program could be intelligently carried out. With an abundance of gamete carriers living under such conditions as to make the avoidance of anopheles impossible, and extensive breeding grounds for anopheles, the observer is given a clear picture as to why malaria is so prevalent in the rural sections of the eastern part of North Carolina, and the four broad principles may be stated as follows:

1. Impossible avoidance of Anophelinae.

2. Presence of extensive breeding grounds for the responsible mosquitoes.

3. Presence of a large number of persons in whose blood the parasites are found.

4. Incomplete quininization.

Outline of Field Studies Conducted With Reference to the Local Anophelinae—Realizing the importance of more detailed information regarding the Anophelinea of the tidal water sections before beginning active control, careful mosquito surveys were made. During the course of the survey larvae were collected wherever they were found breeding, field notes as to the character of the breeding places, extent of breeding, presence of natural enemies of mosquito larvae, (top feeding minnows, water beetles, etc.) were prepared for each collection of water found to breed, and while the evidence given, as based on the data obtained and the phenomena thus far observed, is believed to indicate very strongly that certain facts regarding the propagation of mosquitoes, their ability to transmit malarial infection, and the maximum period for biting will hold good in the tide-water section, the results are by no means considered conclusive and it is expected that the studies will be continued, in order to modify, confirm, or reject the findings so far observed. To do this successfully the studies will be continued throughout the entire mosquito season.

The Extent to Which the Disease is a Menace to the Health and Economic Efficiency of the People—From the foregoing data, it will readily be seen that sixty to seventy per cent of the entire population suffered attacks of malaria at some time during the year, which is on first thought an astonishing high rate. However, when one finds all the factors concerned in the occurrence, spread, distribution, and intensity of malaria ever present, such as the source of infection (the gamete carrier), the carrier of infection (anopheles mosquito), and the recipient of infection (non-infected individuals), we can do nothing more than accept the factors and conditions concerned in the transmission of the disease with the hope of improving the present practice of malaria control.

DISCUSSION

Dr. J. H. Hamilton, Wilmington:

Not having had the privilege of reading Dr. Taylor's paper before it was presented to you, there were a number of points dealing with malaria control that I anticipated would be included in the paper. It is these points that I should like to emphasize.

It is not necessary for us to make a survey to determine that we have malaria in eastern North Carolina. It is a very serious problem. At the same time I do not feel that it is a problem incapable of solution and that it is necessary for us to know a great deal more about malaria and mosquitoes than we now know in order to institute some control measures of distinct value.

In attacking malaria, I think that we should use somewhat the same tactics as the modern army and not depend upon just one gun but use every weapon we have. Drainage, we know, is of distinct value. In some places, however, because of the topography of the country; in others because of the value of the land; and in some because of the character of the population, it is impracticable. But in most places it should be considered a very important part of the malaria program.

Oiling water that cannot be drained or that cannot be drained rapidly will control in great measure mosquito breeding.

The stocking of ponds and streams with top minnows, Gambusia affinis, is of value.

I agree with Dr. Taylor about screening. Many of the houses that most need screening are so constructed that they would become mosquito traps if the doors and windows were effectively screened. In such places mosquitocides and mosquito repellents are indicated.

Quinine, of course, is recognized as a prophylactic and a therapeutic measure of value and should be used. Personally, I am not infavor of a quinine campaign that is not hooked up with other measures in a malarial control program.

Dr. J. E. Smith, Windsor:

I was surprised to find that more colored people have malaria than white. Of course we have it in my County—plenty of it—but I was under the impression that there is not so much of it among the colored people as among the white.

So far as draining is concerned, if you can drain Bertie County I would like to see it done. All the resources of North Carolina could not drain it. It is not down hill enough to have a place for the water to run.

In regard to oiling, I would like to know how often places should be oiled. Perhaps Dr. Taylor can tell me, as he has had experience along that line.

Dr. Taylor, closing the discussion:

It is an easy matter to say that we have sufficient data at

hand regarding the agents responsible for the transmission of this disease, but the biology of mosquitoes is one of the biggest problems we have to study, and it is only through the careful study of these insects that we can hope to apply a program of intelligent control. We know that we have three different species in eastern North Carolina capable of transmitting malaria. We know that all three species have entirely different habits, and also that all three play an entirely different part in the transmission of malaria. Punctipennis begin breeding early in May, and the breeding begins to decline in June. Out of about sixteen hundred specimens of these, I am yet to find one infected in nature, and I doubt if they are of serious public health importance and play any part in the transmission of this disease. Take, for instance, some of the villages in this part of the State, where you have the hill streams, the rocky streams. You find these breeding in countless numbers in these streams, but you have very little, if any transmission of malaria. Take the lowlands, and you have malaria beginning to crop out. It is of the utmost importance, in making a survey or in controlling malaria, to study the biology of the agent causing its transmission, because it is only in this way that we can outline an intelligent program of control.

As to the percentage of infection among the whites and the colored, we have found that the percentage of infection ranges from four to six per cent higher among the colored than the white. This does not mean that four to six per cent more show clinical manifestations of the disease, but they are infected. They have developed not a true immunity, but a tolerance for the toxin that is produced. More of the colored people are infected, but fewer have clinical manifestations.

The time of oiling depends upon the amount of time you want to consume to determine whether the oiling is effective or not. The oiling should be done once a week, but if you have time to study the effects of your oil you can wait until the larvae reach the adult stage and apply the oil then, but as a rule oiling should be done at least once every seven days.

QUESTION:

Is there such a thing as an immunity to malaria?

DR. TAYLOR:

We do not know. There is a tolerance for malaria.

THE CONTROL OF TUBERCULOSIS

WM. M. JONES, M.D., Greensboro

Some of the reasons why tuberculosis has not been controlled would probably be a more suitable title for what I have to say.

First, the mortality from tuberculosis, we know, has been gradually declining for the last quarter of a century, not only in this country but over the entire world. This, however, does not neces-

sarily mean that there has been a corresponding decrease in the morbidity from this disease, for the decrease in mortality may well be accounted for by the improved methods of handling cases.

Tuberculosis has existed since the earliest records of civilization. It is a disease of man and beast, being common to both and communicable from one to another. The communication of disease from man to beast and vice versa is exhibited by but few diseases. However, there is hardly a peculiar characteristic of any disease that is not possessed by tuberculosis. It affects all classes and all ages—here again differing from the general rule of communicable diseases.

Geographically, tuberculosis ranges from pole to pole. It is not affected by seasons, nationalities or continents. It is communicable; the same being conclusively demonstrated by Villamin in 1865 — seventeen years before Kock discovered and proved the cause.

Other communicable diseases are generally acute and self-limited. Tuberculosis, on the other hand, is often acute and, when so, is limited only by an early death; but it is generally chronic without limitation, existing with exacerbations through life. Other communicable diseases have a peculiar selectivity for certain organs, not only the communicable but the non-communicable, whereas tuberculosis plays no favorite and no organ or tissue is immune. So you see we have a disease attacking us from every angle, and not only man but beast, more especially the source of his important food supply. So methods that are found adequate against other communicable diseases are therefore not applicable to tuberculosis.

These are some of the conditions that make tuberculosis so important and so difficult to handle, not alone from the facts above enumerated but also on account of the very nature of the disease itself. Being slow and insidious in its onset an early diagnosis is exceedingly difficult even when the case comes to the physician. Whereas, on the other hand, the very great majority of cases do not come under the observation of a physician. They resort to advertised remedies, etc., until compelled to see a physician, by which time they are generally in the advanced stages.

When we consider all this we are appalled at the enormity of the task before us. But this is not all of the subject that we have to consider, for there is yet another very important factor and one that we may lose sight of in the mass of ways and means, the manners and habits of the disease, and that is the fact that virtually every one who reaches the age of thirty years has had it. Post-mortem examinations made on all cases coming to the morgue in one of the largest cities of the world demonstrated this fact in that ninety-four per cent showed microscopic evidence of having had tuberculosis at some time during life and that the tubercles had healed and had in no way been connected with the demise.

It would appear, therefore, that in order to make more impression upon the mortality of this disease, some additional methods

must be employed. I do not think that all the various methods which have been employed and which have been extolled as being instrumental in the reduction of the mortality of this disease have been anything like so effective as some would have us believe. It takes a generation to show the result of preventative measures against tuberculosis, and those taking place in less time are produced by curative rather than preventative efforts.

Tuberculosis is evidently easy to communicate from one person to another, as evidenced in the postmortem findings before mentioned, while on the other hand the per cent of mortality, when compared with morbidity as found postmortem, is exceedingly small. As an evidence of this, I call your attention to some very striking figures, both from this country and from Norway. These figures show that where a husband and wife are living together—one of whom has tuberculosis and the other has not—the liability of the other's contracting it to such an extent as to be diagnosed ante mortem is only one to fifteen, or, in other words, only about .07%. The figures given from Norway and those given from North Carolina are almost exactly the same. So here goes one of our pet theories to the wind, for what closer or more ideal conditions could possibly exist for communication than those existing between husband and wife? Some years ago we often heard the expression in reference to tuberculosis and its various locations in the body as being due to the selection of the "locus minoris resistentiae," whereas today we might say "Ei minoris resistentiae," the same being simply Latin phrases to cover our ignorance of the subject.

We know that tuberculosis decreased twenty-eight per cent in the United States during the ten-year period from 1910 to 1920. This is, however, very gratifying to all who have been working for the suppression of the great arch enemy of man. Now can we say that any one or even a dozen methods that have been evoked have produced this so gratifying state of affairs? If so, I simply want to ask you this question: Why is it that for the same period and same age range tuberculosis increased .05% in adolescent girls and decreased 25% in adolescent boys? What method or combination of methods were employed that acted so favorably upon male and so unfavorably upon females?

There are certain fundamental facts regarding tuberculosis and its prevention that we must bear constantly in mind and these facts without distortion must be given to the public, but in such a way as not to produce a condition of phthisiophobia. This is not all, nor is it nearly so important as giving the facts to the school children where they act on minds that are receptive and where the statements take root and produce fruit. The only advantage of giving the general information to the public is that the children on coming home from school and having something to say about tuberculosis, the parents having recently seen something in the press or a pamphlet upon the same subject, have their interest aroused and question the child. The child is oftentimes able to give a clear idea and his reasons for the same, and the parent is made to believe

because the child does. But even though the parent may believe he is not going to change his life and habits on account of his changed belief. On the other hand the child, who has not formed fixed habits, will in the majority of incidences so conform his or her life as to lessen the liability of infection. The real good, then, is to come through the children.

The entire subject of the control of tuberculosis may be summed up into "Proper Living." By this I mean housing, food, personal hygiene, sanitation, work and play. I, however, am not a pessimist in the fight against tuberculosis. I believe that sanatoriums, etc., today have their place; and, on the other hand, I believe that we shall have discarded the sanitorium long before we are free from tuberculosis. In other words, I feel that the sanitoriums, etc., are simply stage houses on the road.

Tuberculosis is rapidly becoming a class disease. This the laity already recognize and organizations are clamoring for legislation to shorten the hours and increase the pay of laborers, therefore causing the unrest of labor—and naturally so. But these organizations are, like most of the propagandists we have, advocating this and advocating that, making statements without regard to facts—statements which can be proven only on paper. It is not the hours that labor works or is on duty that are causing the increase (if there is really any increase) but the hours that they are not today working. Labor works at most not more than one-third of the time, and with us here in North Carolina under conditions which while not ideal, are certainly not calculated to increase the susceptibility to tuberculosis. But it is the hours that labor is at rest which are the dangerous ones from the standpoint of tuberculosis. We know how he spends his working hours, and under what conditions, but we know nothing of his hours of rest and recreation.

Proper living will come, but only with time. We shall not live to see it, yet we must do our bit in working out the plans of destiny.

DISCUSSION

Dr. Carl V. Reynolds, Asheville:

Dr. Jones has certainly covered some territory, and how he expects one poor little fellow to get up and in five minutes' time give an audit of tuberculosis I do not know. To start with, it seems to me that it is fundamental that we should distinguish between tuberculosis and tuberculosis infection. Dr. Jones properly says that ninety-four percent of mankind are infected or have tuberculosis. Ninety-four per cent of mankind are infected; 22.25 per cent are infected with tuberculosis and have symptoms. That is a very important point in our fight as health officers for the control of tuberculosis and for the control of the spread of tuberculosis.

Tuberculosis, as Dr. Jones properly says, is a chronic disease, a chronic infection. Tuberculosis has a tendency toward arrestment. Tuberculous infection has a tendency toward arrestment, remaining latent throughout life in the majority of those infected. In

other words, if tuberculosis were not a chronic infection with a tendency toward recovery, sixty-five per cent of us would be exterminated by the time we were sixteen years of age.

For the first year of life I think it is practically neglible. There is less exposure, and most children are breast-fed. From the first year to the fifteenth year sixty-five per cent are infected; from the fifteenth year to the tweny-fifth year ninety-six per cent are infected. In other words, we have two-thirds of our tuberculosis problem to fight before the age of fifteen. Twenty-two to twenty-five per cent have clinical symptoms, have active tuberculosis, are suffering from the disease tuberculosis, and are the ones we are after.

Tuberculosis is a disease with a tendency toward recovery but prone to lapse. There is another point that I want to bring to your mind. That is, once tuberculous always tuberculous. We have children infected, sixty-five per cent of them before fifteen years of age. Seventy-five per cent go through life never showing clinical symptoms, notwithstanding the fact that the tubercle is there, always ready to break out and develop tuberculosis. What is our fight? Our fight is the development of health-giving practices, right living, right feeding, industrial measures, or anything else to keep the constitution at par.

There is one other thing to which I want to call your attention, and that is bovine tuberculosis. From the first year to the fifth year, forty-five per cent of the tuberculosis is in children suffering from the disease is due to bovine origin. Seven per cent (if I am not mistaken) of all tuberculosis is of bovine origin. Now, gentlemen, we can eradicate at one fell blow bovine tuberculosis if we go to it. I have a resolution which I want to present to this Association before we get through. Buncombe County, within two weeks, will have an accredited herd. Every milch cow in Buncombe will be free from tuberculosis within two weeks. Suppose we do that throughout the United States. If we cut out bovine tuberculosis we have saved forty-five per cent of childhood infection up to five years of age, we have prevented bone tuberculosis, and possibly a good deal of pulmonary tuberculosis.

Now, another point. Dr. Jones says that tuberculosis is communicable, highly communicable. It is in certain stages of life, that is, in infancy. But, thanks be to some unknown cause, or thanks be to the virulence of the germ or to the mildness of the infection, that communicability is mild, and that child does not have active tuberculosis. If there is such a thing as immunity it helps the child out, but I do not believe there is such a thing in tuberculosis. There is no specific for tuberculosis, and there is no immunity to tuberculosis. It depends upon whether the body has control of its fighting forces or the tuberculosis bug has control as to whether the infection will remain latent or will gain control of the body.

Dr. R. S. McGeachy, Kinston:

We have a very modest President, but he made a remark some

time ago which I think should be repeated here. He said that in time to come we would control tuberculosis, but not by a specific and not by laws, but when the mothers know how to raise children who can resist tuberculosis, then we shall be able to control it.

Another thing I want to say is that we sometimes pay too much attention to the artificial feeding of infants. What we want to do is to teach that mother, while she is yet a girl, how she can nurse her baby and give it the food that God intended for it.

Dr. Jones, closing the discussion:

There is one thing that I neglected, but of which Dr. Reynolds spoke, namely, bovine tuberculosis and its suppression among cattle. I do not know just exactly how long we have yet before we shall have completed the campaign in my county before we are rid of the tuberculosis among cattle, but it will be certainly longer than two weeks.

I mentioned in my paper the percentage of infection. We know how much phthisiophobia there is among people. They are afraid of catching, or having communicated to them, a condition which they already have. It is when the system gets down below normal that the condition which already exists in the adult individual comes in and gets hold. I found from those figures from Norway, and from records of the Jefferson Standard Life Insurance Company, where they keep accurate records, that where a husband or wife has it, the other develops it in only seven per cent.

ADMINISTRATION OF VACCINE TO RURAL SCHOOL CHILDREN

P. C. Carter, M.D., Weldon

I shall try to confine myself to a practical discussion of work performed and to the methods of advertising the work. It is easy enough to vaccinate large numbers of the population when they are there willing and waiting to to take it, but when we have to combat ignorance and indifference a general fear of vaccination and sometimes superstitution it becomes another matter. And often the hardest part of the work is to get the people enought interested to come to the clinics and take the vaccines.

We have had compulsory vaccination for Smallpox in the Schools of Halifax County since January 1920, and a large percentage of the children have been vaccinated, but not without opposition which has ranged all the way from individual objection of the child to general indignation meetings of parents of the School community.

To begin with, the enforcement of the compulsory vaccination law for Smallpox, the first step was to get the backing of the Superintendent of Public Instruction who gave all the teachers in the county to understand that the instructions of the Health Officer were final, so that when I came to a School I already had the Teacher on my side. I always made it a rule to request that all the

children be brought into one room, if possible, and then made a short talk telling first about the disease in general and ending up by explaining about Smallpox—often showing pictures of cases and vaccination. Then, while the children are in a receptive mood, call for a volunteer to take the first vaccination, he will invariably say "It did not hurt a bit," and the question is often solved there. Sometimes there have been one or two who would not listen to the persuasion of myself or the Teacher—sometimes verbal, sometimes otherwise, and who were then given a note to take to their parents telling them that vaccination was required, and that after that date it was a misdemeanor to send a child to school unvaccinated. A letter was also sent from the office to make sure that the parents were notified, a copy of which was sent to the Welfare Officer—this has caused a few parents to take their children out of School, but the Welfare Officer then takes a hand and the result is usually accomplished. So far, I have not had a single prosecution. I have had one community rebel as a whole who held a parents' meeting and drew up a petition that the vaccination be postponed until the next year. I visited the School and secured the names of the leaders and sent each one a State Board of Health pamphlet on Smallpox, then asked the Teacher to call a meeting of the parents that we might discuss vaccination in a friendly way. At the meeting I found that the principal objector, a widower with nine children, had already been won over on my side by the pamphlet, and the others were easy after a short discussion in which it was pointed out that the two colored schools—one a mile on each side of the white—had already been vaccinated and had raised no objection. Every school child present was vaccinated and the next summer a large percentage took the typhoid treatment along with their parents, and during last Fall every child in the school under ten years of age took Toxin-Antitoxin.

The Teachers can be and have been in Halifax County of the greatest help in vaccination. I have often gone to a School after notifying the Teacher of an intended visit in the near future (I never mention dates for fear there would be a great number absent on that date) and have the Teacher say "Come in Doctor, we are ready for you." Then it is evident that my talk has already been made by the Teacher and I let the Teacher do the arranging. A line is formed and the children march up with every sleeve ready for vaccination. This, of course, facilitates and hastens matters so that a small Country School can be finished in 15 or 20 minutes and the Health Officer on his way.

In the Typhoid Fever vaccination works we are not so fortunate as to have a compulsory vaccination law, and it becomes necessary to resort to education and the psychology of the crowd.

During the summer of 1921, we had a small outbreak of Typhoid Fever in one of our back woods communities, and try as best I could, only a few of the people, most of whom were negroes, would take the vaccination. One family visited had two small children at death's door with Typhoid fever, one had already died and there

were two more playing in the yard. After a short talk with the mother she was asked if any had been vaccinated and she replied "Dat dey aint and aint gwine to be." Seeing that no amount of reasoning could change her I asked where the father was, and was directed to a nearby field. I asked him if he had the money to pay a doctor to treat his other two children, his wife and himself, and on being assured that he had already gone in debt for doctor's bills and medicine to the limit, I asked him if I could help him by telling them what to do to keep from taking Typhoid Fever, and as a result the remainder of the family were vaccinated. This family clearly demonstrated that there were a lot of people who had not heard of the good of Typhoid Vaccination and were both superstitutious and afraid of it, so I determined on a plan of action for the next year in the Schools of that section. Negro health week was the time selected and the plan was as follows:

A speaking tour was arranged for a large section of the back country by the colored Supervisor of Schools and myself. The Supervisor did the advertising and got the people to the Schools and I chose my own subject which was Typhoid Fever and Typhoid Vaccination, and at the end of my talk, while the iron was hot so to speak, I announced that we would start right now and take the first treatment. The children and parents responded very readily and in nearly every instance over 90% of those present took the vaccination while a great many more come in the next week. I have found that there is no time so good as the present and, as a rule, children will follow the crowd. More than 1,200 colored school children from the back woods townships took the vaccination along with a great many of their parents.

At three small colored Country Schools with an attendance of about 40, I offered a prize for the one that got the largest number from their community vaccinated for Typhoid Fever. I was to assist them by furnishing literature only. At one school 32 took it, at another 42, and at the other 155. At the latter the Teacher joined in and all worked together and got the parents interested and they talked it up among themselves. I mentioned these three schools to show what a help the Teacher can be.

In giving Toxin-Antitoxin, I have relied principally upon publicity, and, of course, education. Before beginning the administration of Toxin-Antitoxin in a community, I have found that it is essential to give it the fullest publicity possible. For this purpose articles are sent to all the County papers, and circular letters setting forth all the facts concerning Toxin-Antitoxin are mailed to every parent in the school community with an enclosed slip for the parents to sign and send to the Teacher, requesting that their child be given Toxin-Antitoxin. This has worked well in some communities and failed in others.

To sum up vaccination in general, it is necessary to give the work the greatest publicity possible, to get the assistance of the school authorities, to get the children interested and to get the work started while the interest lasts.

DISCUSSION

Dr. C. N. Sisk, Winston-Salem:

In considering the subject of Dr. Carter's paper, the administration of vaccine to rural school children, I was very much interested in a part of our President's address this morning. He stated that in twenty-eight counties during the year toxin-antitoxin had been administered to 13,500 children; that 23,600 had been vaccinated against smallpox, and 57,000 against typhoid fever, making a total of over 94,000 vaccinated in these twenty-eight counties. He also said that there are nearly one million school children in North Carolina. 450,000 of these school children are in the twenty-eight counties. With only 94,000 people having received all vaccines, granting they were all children, there are left 356,000 school children that received no vaccination. We all know that the school age is the most receptive age for education along any line. That will apply to vaccination as well as any other part of education. Therefore, it seems to me that we can accomplish a great deal by devoting a large part of our energies to this work during the fall months, in the larger schools. There are at least 356,000 children in the twenty-eight counties that are not vaccinated — at least that number.

Dr. Carter states that some of the county school superintendents oppose vaccination. It is almost impossible to conceive of a county school superintendent's not being favorably disposed to it, but I have come in contact with some school teachers who were not only opposed to it, but worked against vaccination. It seems to me that every school teacher should be required to be vaccinated before being allowed to teach. They should be educated to that extent, at least.

One other point is an occurrence which happened in Guilford County. The great obstacle in the way of smallpox vaccination is the story we all encounter as to the number of deaths that are caused by vaccination and the number of arms lost. Of course, they all live somewhere else. Last year there was published in a Guilford County newspaper a story of a child who died from smallpox vaccination. Our papers gave it a rather prominent place, and Dr. Carlton investigated and found it to be quite unfounded. It seems to me that the editor of a newspaper should use more discretion than to publish a report like that, entirely unfounded.

Dr. J. E. Smith, Windsor:

I would like to know how Dr. Carter keeps his records when he goes out to vaccinate a bunch again typhoid fever. If you have two or three hundred you have to take the names and call them up the next time, so you can tell who is taking the second dose or the third dose.

Dr. Wm. M. Jones, Greensboro:

It has been my plan to have some one who knows everybody

in the community to call out the names and keep them in line. I stand with the nurse or assistant, and take them as they come.

Dr. S. E. Buchanan, Concord:

With the method I use I have had no trouble at all. I do not care, after the first trip, what the party's name is. On the first trip I take the name and give a card with a number on it corresponding to the number opposite the patient's name. After the first trip know that all numbers up to a certain point were first or second or third doses. He shows the card and I give the dose. The assistant takes down the number, and after we return to the office the records are made up.

Dr. R. S. McGeachy, Kinston:

I take the names every time they come, and sometimes I go four or five times. Once I went six times—six Thursdays right along. We had some smallpox in Lenoir County, and happened to have one death, and after that they came in all right for vaccination. There were only eight or nine cases among the white people, and one died. There were forty or fifty cases among the negroes, but no deaths, although some of them came near dying. I took around with me several cases that had passed the infectious stage, and showed the people what a case of smallpox is like.

I have known people to die of almost anything, and I do not doubt that possibly some do die from being vaccinated, but I want to know about it. If any one here knows of a death from vaccination I would like to have the facts.

I took some photographs of vaccination scars, and then a photograph of a prominent white man who recoved eight years ago from a severe case of smallpox. He had the worst pitted face I have ever seen. He said he would gladly let me use his photograph.

Dr. J. E. Smith:

I get some one in the crowd to take the names the first trip. Before I make the second trip I copy them into a notebook, alphabetically. Then, when the person comes up, we ask the name and look it up and check it.

Dr. McGeachy:

It is easier to write down a name than to look it up, and it is quicker. We write them down every time.

Dr. L. J. Smith, Wilson:

One thing I want to say was touched upon by Dr. McGeachy, that seeing is believing. I find that the bulletin gotten out by the State Board of Health on smallpox, if properly distributed, and properly taught, is the greatest aid we have in getting people vaccinated against small pox.

Dr. McGeachy:

I have people come to me and ask how long it will last. I ask

them "How long are you going to live." I have never yet seen a case of smallpox in a vaccinated person.

Dr. R. L. Carlton, Winston-Salem:

For the Doctor's information, I would say that in a smallpox epidemic in Denver last year about twenty per cent of the cases had been vaccinated, most of them some years before.

Dr. J. A. Morris, Oxford:

Several years ago we had some cases of smallpox in our county, and I saw one case with a vaccination scar. It was not a very good scar, but he had a case of varioloid. The scar was not a first class scar.

Dr. McGeachy:

I was vaccinated in 1892, and for the last several months I have been going into smallpox every day, but I believe now I shall be vaccinated when I go back home.

Dr. Carter, closing the discussion:

In regard to the immunity conferred by vaccination against smallpox, I have the question asked often: "Doctor, I have a scar. Do you think it is good?" I tell them no, as rule, that you can not tell by the size of the scar. I usually advise them to be vaccinated again, unless the vaccination is of recent date. If the vaccine is fresh and it does not take again I tell them they are probably immune.

THE AIMS AND PURPOSES OF MATERNITY AND INFANCY WORK IN NORTH CAROLINA

K. P. B. Bonner, M.D., Raleigh

Human knowledge, like all other physical activities, is progressive in its development, or evolutionary in character. One is not compelled to be burdened with years to recall the period of infancy of the science of public health or preventive medicine. This science has developed more rapidly possibly than any other, for the history of the enlargement of understanding in connection with science shows almost invariably a slow and tedious process. Most of us now in the practice of medicine can remember when public health, with its attendant problems, was given little consideration; attention being centered on curative medicine. The principle of preventive medicine is now universally recognized by the profession and public alike and a premium is being placed more and more upon the conservation rather than the restoration of human health and physical fitness. The resultant development in this field has astounded the civilized world and has furnished accomplishments within a short span of years that were deemed impossible. The value of conservation of human life and physical fitness is firmly fixed in the mind of the public. It is generally admitted that individual death or physical impairment means economic loss to human society and

that as the health of society is conserved, material prosperity and human happiness is increased in the same proportion. Such being the trend of present day thought, founded upon an undeniable truth, it is imperative that the medical profession consider the best means to adjust itself to the changed order and meet the demand that is so insistent. The public is demanding that it be kept well rather than restored to health after becoming ill and a ripe opportunity awaits the profession in this field that is a branch of medicine. It is an opportunity that promises great things for the general welfare of the public and substantial financial reward to the profession in return for the service rendered. A well citizenship is better able to pay to keep well than a sick public to have health restored. Sickness spells impairment in earning capacity and economic loss as well as physical disintegration.

Attention has only been turned to infancy and maternity work in public health programs in the last few years. In these enlightened days it is strange that so little thought was given to problems surrounding the inception of human life; the life of our future citizens, the welfare of those charged with the duty of bringing them into being, and the preservation of our own species. Within only the past year the Federal Government has given a decided impetus to this work in the enactment of the bill appropriating substantial financial aid to all States for the promotion of the welfare and hygiene of maternity and infancy. Investigation of statistics has developed some startling facts and proven that this field of public health offers some of the richest opportunities for advancement in public health. Investigation has revealed a large mortality in these classes of our citizenship that, with the institution of proper measures, may be prevented. Investigation has revealed that this is one of the most important fields in future public health service and that future substantial advancement lies there.

It is past understanding why such little thought was given to the importance of the preservation and conservation of human life in its weakest and most helpless state, yet such is true.

It is possibly interesting to note that infant mortality in the registration area of the United States for the year 1921 was 76 per 1,000 births and that of North Carolina for the same year was 75 per 1,000 births. These figures do not include stillbirths. There were 825,511 total deaths in the registration area of the United States in 1921, of this number 129,588, or over fifteen per cent were under one year of age, exclusive of stillbirths. The total deaths in North Carolina during the year 1921 were 33,052, of this number 12,138, or thirty-seven per cent, died either at birth or under two years of age. During 1922 the total deaths in North Carolina were 35,823, and of this number 11,684 or thirty-three per cent died at birth or under two years of age; in some counties this percentage runs as high as fifty per cent. A study of the age period of infant mortality furnishes some startling facts. Of a total of 11,684 infant deaths in North Carolina in 1922, 3,699 were stillborn, 2,420 died during the first week, 411 during the second week, 489 during the

third and fourth weeks, 409 during the second month, 632 during the third and fourth months, 525 during the fifth and sixth months, 1,006 from the sixth month to one year, and 1,511 during the second year. Please note that infant mortality drops like a sky-rocket after the sixth month and that seventy-eight per cent of all infantile deaths occur during the first six months of life. In this connection a presentation of the causes of infantile mortality is not amiss. This analysis gives information that speaks for itself.

AGE DISTRIBUTION OF INFANTILE DEATHS

Total stillbirths	3,699
Total first seven days	2,420
Total eight to fourteen days	411
Total fifteen to thirty-one days	489
Total first and second months	991
Total third and fourth months	632
Total fifth and sixth months	525
Total seventh month to one year	1,006
Total one year	1,511
Total under two years	11,684

DISTRIBUTION BY CAUSES OF INFANTILE DEATHS

Typhoid fever	12
Malaria	43
Smallpox	1
Measles	10
Scarlet fever	26
Whooping cough	165
Diphtheria	208
Influenza	175
Dysentery	110
Erysipelas	22
Acute poliomyelitis	7
Lethargic encephalitis	2
Chicken pox	1
Mumps	1
Other epidemic disease	1
Tetanus	20
Tuberculosis of lungs	31
Tuberculosis (all other forms)	34
Syphilis	32
Gonococcus infection	1
Purulent infection, septicemia	25
Cancer of the buccal cavity	1
Cancer of the female genital organs	1
Cancers of unspecified organs	10
Benign tumors	1
Rheumatism	3
Scurvy	2

Pellagra	1
Rickets	14
Diabetes mellitus	3
Anemia	7
Leukemia	1
Other general diseases	51
Encephalitis	10
Meningitis (simple)	112
Other diseases of the spinal cord	4
Cerebral hemorrhage, apoplexy	43
Paralysis	4
Epilepsy	8
Infantile convulsions	86
Other diseases of the nervous system	6
Diseases of the eye and annexa	3
Diseases of the ear and of the mastoid process	10
Endocarditis and myocarditis (acute)	4
Other diseases of the heart	19
Diseases of the lymphatic system	3
Hemorrhage without specified cause	4
Other diseases of the circulatory system	6
Diseases of the nasal fossae and their annexa	4
Diseases of the larynx	18
Bronchitis	89
Bronchopneumonia	664
Pneumonia	402
Pleurisy	11
Congestion and hemorrhagic infarct of lungs	19
Asthma	2
Pulmonary emphysema	2
Other diseases of the respiratory system (tuberculosis excepted)	2
Diseases of the mouth and annexa	12
Diseases of the pharynx and tonsils	4
Ulcer of the stomach and duodenema	2
Other diseases of the stomach (cancer excepted)	78
Diarrhoea and enteritis (under 2 years)	1,454
Diarrhea and enteritis (under 2 years)	1454
Diarrhoea and enteritis (2 years of age)	22
Diseases due to other intestinal parasites	7
Appendicitis	2
Hernia	58
Other diseases of the intestines	3
Other diseases of the liver	8
Peritonitis	5
Acute nephritis	29
Nephritis	25
Other diseases of the kidneys and annexa	5
Diseases of the bladder	1
Gangrene	4
Acute abscess	2
Other diseases of the skin and annexa	8

Diseases of the bones (Tb. excepted)	4
Congenital malformations	224
Congenital debility, icterus and sclerema	16
Premature birth; injury at birth	1,843
Other diseases peculiar to early infancy	56
Lack of care	21
Poisoning by food	19
Poisoning by venomous animals	2
Other acute accidental poisonings (gas excepted)	35
Conflagration	4
Accidental burns (conflagration excepted)	75
Accidental mechanical suffocation	48
Accidental absorption of irrespirable or poisonous gas	20
Accidental drowning	15
Accidental traumatism by firearms	6
Accidental traumatism by cutting or piercing instruments	1
Accidental traumatism by fall	5
Railroad accident	1
Auto accidents	6
Injuries by animals (not poisoning)	1
Homicide by other means	3
Infanticide (murder of infants under 1 year)	3
Other external violence (cause specified)	5
Other external violence (cause not specified)	2
Sudden death	65
Cause of death not specified or ill-defined	1,769
Total	8,534

You will note that stillbirths, premature births, congenital debility, diarrhea and enteritis and preventative diseases are the great factors in infant mortality. During 1921, 526 mothers died in the pregnant state and in 1922, 507 more died from the same cause. The act of maternity is a natural process and therefore if properly supervised before, and scientifically managed at the time, should theoretically furnish no mortality.

A review of the above figures will show that the proportion of preventable deaths runs much higher than in general mortality figures. It is therefore conservative to place the preventable deaths of maternity and infancy at fifty per cent of the total preventable deaths in the State. With such a condition the opportunities for real constructive work is obvious. A careful study of the problems touching upon maternity and infancy show conclusively that three great factors contribute to the preventable deaths of mother and baby; lack of prenatal care, accidents at birth and improper care of the baby. Many elements enter into production of each of these factors.

The aim of infancy and maternity work in this State is to reduce preventable deaths in these two classes to a minimum and to improve the physical condition of those who are living. The importance of the conservation of health of those spared can not be overestimated, but no system has as yet been devised to measure

its full value. The baby is, after all, only a miniature man and who can say how far-reaching the effects of a puny, delicate and sickly infancy may have upon the future physical health and welfare of the man that is developed? Some recent studies along original lines, with this point in mind, has brought out some significant facts. For instance, the mortality during the first year in artificially fed babies is four time as high as that of breast-fed babies but the mortality occurs in the remote months and not in the months immediately following the institution of artificial feeding. The common defects of preschool children have been found nine times as frequent among those who were artificially-fed in infancy. Would it be a great stretch of imagination to say that at least a portion of the ailments of the adult would disappear if development came following normal breast-fed infancy. The remote effects of the diseased initiated during the neglected prenatal period are too well known to require discussion. The life of many a good woman is prematurely cut off at the age of forty or fifty as a result of disease begun during a neglected pregnancy in early life. It is therefore easy to understand that the preservation of the physical fitness of those living is just as vital as the reduction in the preventable mortality of those who die.

In mapping out the work in maternity and infancy in this State it has been necessary to set certain standards, lay out certain plans that may well be called the purposes, that the aims or ideals may be reached. To accomplish results worthy of any serious consideration in public health, the public must be educated as to the underlying principles and the importance of conservation of public health. This is particularly true as it applies to work in the hygiene of maternity and infancy, since the effects of failure to do this minifests themselves in a remote period.

Education of the general public is being undertaken by dissemination of knowledge on these subjects through the medium of the written and spoken word. The literature that is being distributed principally from the central office is standardized and reaches the individual direct and is of a character suited to the needs of each case. To assist in obtaining the necessary data an attempt is made to secure the report of expectant mothers and babies in need of literature on office report cards carrying the minimum essential data. The office is contemplating the development of a special advisory department whereby each mother will be communicated with by personal letter where the report shows either her or her baby's condition not to be up to normal. These will be referred into the hands of the medical profession, if possible, and the results as it relates to the development of medical practice can well be imagined. The above, together with published articles in various publications having wide circulation, covers the plan of distribution of the printed word.

Public approach with the spoken word is being accomplished by two means; talks by speakers, usually from the office, to large groups, and the contact of the special local nurse who reaches the

smaller groups and the individuals in their homes. In this connection it may be stated that county unites limited to maternity and infancy work are being developed over the State under the supervision of nurses. With the active support and co-operation of the local medical profession the nurse will be enabled to materially develop the work, since she deals only with the hygiene problems and will refer those in need of medical attention to the family physician. Helping the nurse will help the doctor.

Careful consideration will show that certain minimum standards should be set for the proper protection of the public health. These should be as follows:

For mothers:

1. Establishment of maternal centers in the larger cities, where the following service is available:

(a). Complete physical examination.
(b). Instruction in hygiene of maternity.
(c). Employment of sufficient nurses to visit and see each patient in her home and that no disorder is developing.
(d). Confinement under the care of a scientific medical man.
(e). Daily visits for five days and at least two other visits during the puerperal period.
(f). At least ten days rest in bed absolute suspension of work for four to six weeks.
(g). Examination at end of six weeks before final discharge.

2. Encourage the development of maternity wards in hospitals sufficient to care for every complicated case and those wishing hospital care.

3. All midwives should be required by law to show adequate training, and to be licensed or supervised.

4. Education of the general public as to problems presented by maternal and infant mortality and their solution.

For infant:

1. Registration of births.

2. Prevention of infantile blindness by instillation of proyphylactic solution in the eyes of each newborn.

3. Establishment of infant health centers to furnish instruction in infant hygiene. This should include:

(a). Value and importance of breast-feeding.
(b). Technic of nursing.
(c). Technic of bath, sleep, clothing, ventilation, and general care of baby.
(d). Preparation of artificial feeding.
(e). Dietary essentials and selection of food for infants.
(f). Prevention of disease in infants.

4. Employment of sufficient nurses to make home visits and instruct mothers.

5. Establishment of baby wards in hospitals.
6. General educational work in the hygiene and feeding of infants.

In conclusion it may be said that the need for the work was shown in the paragraph devoted to statistics on infant and maternal mortality. The majority of these deaths are preventable. Procedure has been suggested that is calculated to solve the problem and assist in eliminating the dangers surrounding mothers and babies. Each public health worker can render valuable assistance in making this program possible, and thereby at the same time contributing to the removal of what is a blot upon the escutcheon of modern civilization.

DISCUSSION

Dr. M. L. Ilsley, Asheville:

I have listened with a great deal of pleasure to this paper of Dr. Bonner's. In my opinion, the work of which Dr. Bonner has charge is the most important part of preventive medicine, not even excepting the tuberculosis work. Let me name over the causes of death among infants, and emphasize their importance. Among them are premature birth, diarrhea and enteritis, congenital debility, malformation, etc., etc.

The babies from three to six days old are killed by premature birth and congenital debility. When two weeks old, they are killed by premature birth, diarrhea and enteritis, congenital debility; at three weeks, premature birth, diarrhea and enteritis, and congenital debility. One month, diarrhea and enteritis, and congenital debility. Two months, the same. Three to five months, diarrhea and enteritis bronchopneumonia, pneumonia; six to eight months, diarrhea and enteritis, bronchopneumonia, whooping cough; nine to twelve diarrhea and enteritis, bronchopneumonia, pneumonia.

In a recent study on the relation between illiteracy and premature death an interesting thing was found. Diarrhea and enteritis under two years of age was taken as being the most representative disease of infancy. The correlation co-efficient was plus .7, with a probable error of .015. The correlation coefficient was as large as any to be found in public health problems, and the probable error seventy times. This all is very encouraging to the public health officials who enter this field and specialize in it.

Dr. D. R. Perry, Lexington:

I wrote to Dr. Bonner and he sent me the names of some forty midwives practicing in Davidson County. Of this number only twenty-seven were located; on account of senile and feeble condition and death, the remainder had retired. Only about twenty now are practicing.

In making a Wassermann of every one of these midwives twenty-seven came in. Seven had a four plus Wassermann, and I told them that on account of bad blood they could not practice at all. I did not try to treat them, just told them to go to their family

physician, and I am sure they did not treat them for syphilis, having in mind the return to their profession. When this large percentage of infection was known there was a strong sentiment to cut out the practice of midwifery entirely. In two townships, where the medical profession is ample to take care of the needs, this step is highly favorable.

DR. R. S. MCGEACHY, Kinston:

I want to ask Dr. Bonner a question. We have in Lenoir County a blind infant about two months old. The woman who attended that birth was not a midwife, and had no prophylactic or anything. How can I present that thing from happening again?

DR. R. L. CARLTON, Winston-Salem:

Does Dr. Bonner advise health officers in the various counties to take a Wassermann of all midwives who apply for license? What will be done to the midwives who are refused license and who continue to practice? What does Dr. Bonner consider the educational requirements for midwives should be?

DR. BONNER:

Replying to those questions that have been raised in regard to the problem of the control of midwives, I might say, in answer to Dr. Perry, this: I do not doubt that what he says is true, that our record shows forty-three midwives practicing in his county when he could find only twenty. But there are other counties where the lack is more than offset by the excess on the other side of the ledger. We have to depend upon the county health officers to assist us in keeping our list of midwives up to date. We find many times in our register of midwives that they are like the perennial jimson weed, because one dies today and another inquires tomorrow how she may become a midwife. The number coming in makes up for those who die. And they never get too old. In fact, they do not begin until they are seventy, when the special senses are impaired, not only sight and hearing, but even the sense of touch.

Answering Dr. McGeachy's question, that woman violated three penalty sections of the statues of North Carolina. She violated one section by failing to register as a midwife. She violated the section requiring the registation of births, and also violated that section requiring the installation of prophylactic in the eyes of the child. In due time she will be prosecuted.

DR. MCGEACHY:

Suppose in a case of emergency some neighbor had to officiate in the absence of the midwife who was engaged. You know that in some parts of my county the people are fifteen or twenty miles from a physician. Now, what are you going to do? Suppose we push the thing and the woman can not get any one to come because she can not get a registered midwife? That woman herself may die, in addition to losing the baby, or having a blind baby. No woman

will go in to help out if she knows that she is liable to prosecution for acting unprepared.

Dr. Bonner:

There is no law on the statute books that does not work a hardship in some of the cases. Laws are enacted for the protection of the many. When it comes to the matter of considering the inconvenience or even sometimes an injustice upon the minority, the interest of the majority takes precedence over the interest of the minority.

Dr. McGeachy:

When our nurse brings in a report of a case, can not we furnish that woman herself with one of those ampoules and tell her to use it in an emergency? We might tell her to call in the midwife, but if the midwife is unable to get there and some other woman comes in, to have that other woman use it.

Dr. Bonner, closing the discussion:

Yes, you can do that.

Replying first to Dr. Carlton's question as to the registration of midwives, our method of handling the registration of midwives, absolutely is in accordance with the work of local health departments. We have made it an inflexible rule that we will not register any midwife direct, in counties having health officers. The certificate is sent through the local health officer, and this may act, at his pleasure, as a license as well as a registration certificate. We have drafted a model law governing the practice of midwifry that may be adopted into law, the purpose being that county boards of health may adopt it if they see fit. Many have adopted it. Those model laws contemplate a minimum of the essentials. Among other things it requires not only registration, but a course of instruction to be given by some representative of the local board of health, or preferably a board of physicians appointed by the county medical society. When these women have familiarized themselves with the course of instruction, after due examination, they are certified as to their proficiency in that part of the work. The next section requires that they must be temperate and free from contagious diseases, and must not use drugs habitually. Another section provides that no midwife is permitted to make any internal examination, and is not permitted to handle the baby or the resultant products of birth without first thoroughly washing and scrubbing the hands. Another section prohibits the attendance of midwives on patients having the following characteristics: Those cases having marked swelling; those cases accompained by severe hemorrhage; those cases having convulsions; those cases having labor prolonged for more than twelve hours.

Finally, the law imposes a penalty for failure to qualify, and one section provides further, as a penalty, that if any registered or licensed midwife fails to comply with any of these regulations her

certificate may be revoked, and, in addition thereto, she may be fined. The concluding section provides that those failing to comply may be fined, and it provides that any or all of the laws may be revoked at pleasure. If the profession of a county assumes the responsibility for the practice of obstetrics, the midwives can be abolished altogether. That law embodies what we consider the minimum of instruction for any midwife in North Carolina. That law is available to any health officer. If any health department wants the assistance of the Bureau of Maternity and Infancy, we shall take pleasure in calling the midwives for a conference. We find great good accomplished, and better work is done if the conference cover six one-hour periods, one hour in the morning and one in the afternoon, on three separate days.

QUESTION (DR. CARLTON):

Would you advise the health officer to disqualify midwives who can not read and write?

DR. BONNER:

In my obstetrical practice I found this, the more ignorant they were, the more appreciative they were of instruction. They will not forget what you tell them, and the more they realize their limitations, the more frequently they will call in a doctor. I built up a large obstetrical practice by teaching the midwives, so that they began to realize the great responsibility resting upon them. They got just as much out of it by acting as nurse, and they got rid of the responsibility.

DR. R. S. MCGEACHY, Kinston:

In Lenoir we laid down a rule that if a woman had a physician engaged, the midwife was not to give directions as to what to get ready, etc. We also made a rule that when certain things were developing they must tell the woman straight up and down to get a physician. Some of the symptoms mentioned in the rule are severe and prolonged headache, excessive nausea and vomiting, swelling, etc.

The Committee on Visitors and New Members reported as follows:

We desire to express the appreciation of the Association for the presence of visitors, especially our appreciation of the presence of Dr. John A. Ferrell, of New York City, and of his remarks.

As to new members, we find it impossible to determine who are new members.

REPORTS OF COMMITTEES

The Committee on Resolutions reported as follows:

1. In view of the fact that the United States Public Health Service has seen fit to remove from our State Dr. K. E. Miller, former head of the Bureau of County Health Work, therefore

Be It Resolved: First, that this Association express its sincere regret at the loss of so valuable a man as Dr. Miller;

Second, that a copy of this resolution be spread upon the minutes, and that the Secretary be requested to forward a copy to Dr. Miller.

2. Whereas it is felt that this meeting has been one of the most interesting and instructive in the history of our Association, therefore

Be It Resolved, That the sincere thanks of this Association be extended to its officers for their efforts in preparing the program, and also to those who have contributed the splendid papers and discussions.

3. Whereas it is felt that the success of this and other recent meetings of this Association has been greatly contributed to by the efficient work of the stenographer, therefore

Be It Resolved, That the hearty thanks of this Association be extended to Miss Mary Robinson for her very proficient work.

4. Whereas the management of Kenilworth Inn have extended, without charge, the use of this hall, which has been so suitable for the purposes of this meeting, and have been so courteous to the Association in every way, therefore

Be It Resolved, That they be given the thanks of this Association for their contribution to the pleasure and success of this meeting.

The resolutions presented by the Committee were adopted.

The Committee on the President's Address reported as follows:

Whereas, the President of the North Carolina Public Health Association, in his annual address before this body today, set forth in an admirable manner some of the things being done in a public health way in this State, and mentioned some of the things which still need to be done in order to bring to pass some of our public health ideals, therefore

Be It Resolved, That this Association fully endorses his program and commends it to all citizens of North Carolina, to the end that every one may know more of the message of health and of how it may be attained.

J. A. Morriss,
E. T. Hollingsworth,
R. L. Carlton,
Committee.

The report of the Committee was accepted.

The following resolution was introduced by Dr. C. V. Reynolds, and was adopted:

"The plan for eradication of bovine tuberculosis in North Carolina was recently adopted by most of the states at the international meeting of Live Stock Association at Chicago, Illinois. The work is conducted under the Accredited Area plan, by which is meant each county separately taking up tuberculosis eradication, co-operating with State and Federal departments, and all cattle within the said county are tested. After all tests are made and all reacting cattle slaughtered, the said county as a whole becomes an accredited area.

At present the following counties are doing tuberculosis eradication under the accredited area plan in North Carolina, viz.: Alamance, Buncombe, Cabarrus, Cumberland, Forsyth, Guilford, Greene, Iredell, Mecklenburg, Pender, Robeson, Rowan, Stanly, Stokes, Wayne, Harnett, and Pitt. Nine other counties are ready to take up the work. Buncombe County, within the course of two weeks, will be completed.

At present there are over three hundred and fifty accredited, or entitled to be accredited dairies, and upon the completion of the test, all cattle within Buncombe County becomes accredited.

Therefore Be It Resolved, That the methods and efforts put forth by Dr. William Moore, State Veterinarian, and Dr. Paul Vaughn, Federal Inspector in charge of the State of North Carolina, in the eradication of bovine tuberculosis, are indorsed by the North Carolina Public Health Association.

After some discussion, a motion introduced by Dr. L. J. Smith, indorsing the action of town councils in passing ordinances requiring the immunization of dogs against rabies, thus preventing the spread of the disease, was tabled.

ELECTION OF OFFICERS

The following officers were elected:

President: Dr. C. W. Armstrong, Salisbury.
Vice-President: Dr. L. L. Williams, Mount Airy.
Secretary: Dr. F. M. Register, Raleigh.

Adjourned.

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